Climate Change Consultation

November, 1999

VOLUNTARY PLANNING

VOLUNTARY
PLANNING

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February 7, 2000

Honourable Ernie Fage
Minister of Natural Resources
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Dear Mr. Fage:

We are pleased to report on a climate change consultation process held in November, 1999, on behalf of the Department of Natural Resources and the Interdepartmental Committee on Climate Change. Six workshops were held around the province with a total of one hundred forty-seven participants. An additional twenty participants took part in a special industry workshop sponsored by the Voluntary Planning Forest Sector. Twenty-eight written submissions were received.

This document summarizes the views expressed through the workshops and in writing on the guiding principles that should shape the development of a Nova Scotia Strategy on Climate Change and on sector specific issues. Detailed notes from the individual workshops are included as Appendix I of this report. Those who provided a written submission are acknowledged in Appendix II.

While it was not the intent to achieve consensus on specific issues, there were several consistent messages which came forward:

- Climate change is an issue which needs to be addressed immediately by all Nova Scotians with leadership to come from the provincial government. The Nova Scotia strategy should be cognizant of but not dependent on the position taken by Canada on the Kyoto Protocol;

- There is caution against taking action which will have a negative impact on the economy of the province but much can be done through building awareness which should start immediately;

- For the most part, Nova Scotians are not well informed about the subject of climate change and there will be a significant challenge to increase the level of understanding on the issues and the role that all can play in taking action. The key will be to work in partnership with existing community and industry based organizations in building broad based awareness and through public debate to identify ways to address reduction, adaptation and development opportunities.

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Based on the input received through this consultation process we have presented a number of general recommendations and conclusions for your consideration in the development of a Nova Scotia Strategy on Climate Change, along with more specific recommendations related to guiding principles and sectors of the provincial economy.

Thank you for the opportunity to serve the province in this consultation process.

Yours truly,

Dan Brown

Dan Brown, Co-Chair
Climate Change Consultation Process
Voluntary Planning

Don Zwicker

Don Zwicker, Co-Chair
Climate Change Consultation Process
Clean Nova Scotia

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Executive Summary

I Introduction

At the request of the Department of Natural Resources and the Interdepartmental Committee on Climate Change, Voluntary Planning and Clean Nova Scotia conducted a consultation process to seek the views of Nova Scotians in preparation for the development of a provincial climate change strategy. This is a report on the input received through six workshops held in November, 1999, as well as comments received in writing.

While there were many points of agreement among participants at each workshop, it was not the intent to reach consensus. It was an opportunity for a broad range of Nova Scotians to discuss the issues and to share their views with each other as well as to provide input to the provincial process.

II Observations

In summary, what was heard during the consultation process was that climate change is an issue which needs to be addressed immediately by all Nova Scotians with leadership to come from the Government of Nova Scotia. Working with Nova Scotians, the provincial government should create a Nova Scotia Strategy which is cognizant of but not dependent on the position taken by Canada on the Kyoto Protocol. The strategy should identify adaptation and mitigation measures which do not impact negatively on the economy of the province. Much can be accomplished through "no regrets" actions, particularly building awareness which should start immediately.

Education, communication and research were seen to be essential elements of the strategy. While the participants in this consultation process have some knowledge of climate change issues, it is recognized that for the most part Nova Scotians are not well informed about the subject. There will be a significant challenge to increase the level of understanding on the issues and the role that all can play in taking action. The key will be to work in partnership with existing community and industry based organizations in building broad based awareness through targeted messages.

Many parts of the province are already seeing the impacts of climate change, particularly those communities centered on resource-based industries. The provincial government should take advantage of existing research resources to reduce the uncertainties regarding climate change and to identify development opportunities. Through public debate government should identify ways to enable communities and sectors to adapt, to make progress in mitigation and to take advantage of development opportunities.

III Guiding Principles

3.1 Examples of Principles

In preparation for the workshops, participants received a workbook *Turning Challenge Into Opportunity* which was developed to stimulate discussion. The workbook included some examples of guiding principles that have been used in other provinces to develop their strategies.

In addition to the comments noted under the specific principles below, as part of the discussion, participants expressed their general views on the type of measures which could be undertaken, both in the form of "sticks and carrots" - legislation and incentives, and the timing of such actions. The importance of building awareness was a common theme brought forward throughout the discussions. A number of suggestions were made for rewording of the suggested principles.

3.1.1 Immediate action is needed to limit the impact of climate change

This suggested principle generated the most discussion among participants with the views falling into several categories:

i) an agreement with action being taken with several suggestions being made for rewording to strengthen the principle;
ii) a recognition that action is already taking place which should be complemented and supported;
iii) that the precautionary approach be included as part of this principle;
iv) that the no regrets options be maximized first;
v) that more information is needed before taking any action.

Some participants felt that the provincial government should encourage the federal government to ratify the Kyoto Protocol. Even if the US won't sign immediately, Canada should take the lead. Others felt there would be negative impacts for Canada if other countries did not sign while we did, placing us at a competitive disadvantage.

3.1.2 We all need to act and cooperate

Following from the discussion on the previous principle on the need to take action, participants discussed who should be included in such actions and the importance of considering the global context of Nova Scotia's response as well as recognizing impacts on the local economy of any proposed actions.

3.1.3 We need to identify the costs and benefits of proposed actions

In discussion of this principle, participants felt that the process should include:

i) full cost accounting - the identification of the costs and benefits of proposed actions on social, environmental and economic levels;
ii) the costs and benefits of actions aimed at adaptation as well as mitigation;
iii) the costs and benefits of inaction.

3.1.4 Adaptation needs to be facilitated

Participants were unclear about the meaning of this suggested principle. It was recognized that adaptation can be viewed from two points: i) coping with the effects of climate change and taking anticipatory actions and ii) adapting lifestyles to emit less. It was felt that rather than facilitation what was needed was leadership.

3.1.5 Actions must be designed with a strategic approach

There was a general agreement among participants at all sessions that this principle should be a given. There was discussion on specific aspects of the planning, implementation and monitoring processes of the strategic approach.

3.1.6 Agreement on long-term goals will help set shorter-term goals

In addition to bringing forth points on the long term and short term decision making process, participants commented on aspects of technology and lifestyle that should be considered as well as Nova Scotia's response to climate change as it fits in the global context.

3.1.7 A coordination body is needed

In discussion on this suggested principle, participants agreed that coordination is needed however they felt strongly that no new bureaucracy should be created. They considered the role which could be played by government, non-government organizations and the private sector, as well as what the mandate of the coordinating body should be related to addressing climate change issues.

3.2 Other Principles

3.2.1 Communication, Education and Building Awareness

Participants in all sessions were unanimous that communication, education and building awareness are a vital part of a climate change strategy and that a separate principle should be added. There were cautions against focusing only on education to the exclusion of other options.

Participants recognized that education is a long term process and that the concept of climate change will be a difficult one to introduce to the public. The approach will need to be different for the various sectors of Nova Scotian society. A number of suggestions were made for taking action on this principle.

3.2.2 Research and Development

Similar to education, the importance of research and development was brought forward at each workshop. It was felt that research and development were essential in addressing climate change and should be added as a separate principle.

3.2.3 Other Suggested Principles

Several individual suggestions were made for the inclusion of other principles:

i) Native concerns - including the availability of funding and expertise. Native issues are currently a federal responsibility. On the climate change issue, the provincial government should also be involved.

ii) That the province and municipalities use the principle of insurance as a guiding principle in making decisions on initiatives, approaching the issue of climate change as a significant risk which requires a comprehensive insurance policy.

iii) Consider sustainable economic development, whatever actions are taken.

iv) Integrate climate change with an overall environmental strategy.

v) Equity - no one province or consumer should be unfairly burdened with a solution.

vi) Preserve and promote the international competitiveness of Canada - ensure that we are still internationally open for business by incorporating market solutions.

IV Sectoral Discussions

Section 5 of the climate change workbook describes the contributions of various sectors to greenhouse gas emissions and provides examples of their efforts to reduce these emissions.

As part of the discussion on each sector, participants suggested specific measures which could be undertaken in the form of education, research and development, legislation and incentives.

4.1 Energy

Much of the discussion on this sector focused on the role which Nova Scotia Power is, and should be, playing in the reduction of emissions. It was felt that significantly greater attention has to be paid to the development of alternative energy and earth energy opportunities throughout the province.

Greenhouse gas emissions were seen as more of a consumption than a production issue for this sector, and it was suggested that a distinction needs to be made between the two in the development of actions. Concerns were raised on the impact to the competitiveness of this sector if Canada and individual provinces take a direction which is different than our major United States trading partner.

For its part, Nova Scotia Power is pursuing three key measures: education of the end user, improved energy efficiency in the production/distribution of electricity and a move away from the more carbon intensive forms of fuel as the company grows and as facilities reach their full commercial life. Suggestions were made for the province and the utility to place a greater emphasis on renewable energy and earth energy. Much can be done through education, research, incentives and the exploration of development opportunities.

4.2 Transportation

It was recognized that transportation is a large component of the greenhouse gas problem and that there are many opportunities to be explored in this sector to reduce emissions. Within ten years, we will have new technology and we will need to adapt, but over the longer term, we have to look at how and why we use transportation. This will involve an examination of our personal transportation choices as well as the movement of commercial traffic.

Longer term measures for this sector include managing demand for transportation. In the shorter term, it was felt there was a need to examine land use policies which encourage the use of automobiles and to place a greater emphasis on public transportation. Suggestions were also made for education and building awareness as well as legislative action, such as vehicle fuel efficiency and incentives for car pooling and home offices. The impact of new technology was also noted.

4.3 Buildings

It was recognized that the buildings sector is a big contributor to greenhouse gas emissions in Nova Scotia and at the same time actions related to energy efficient buildings are probably the most achievable of those within all the sectors. A number of existing initiatives were discussed.

Participants felt that much could be achieved in terms of energy efficiency through education and awareness. Measures were also suggested in the form of legislation, incentives, building codes and land use bylaws.

4.4 Manufacturing

Participants felt that a reduction in consumption is the way to address climate change issues in this sector as consumer demand drives manufacturing. It was felt to be necessary to find ways to capitalize on efficiencies in homes, vehicles and factories. Participants suggested that as a society we need to develop more reusable products and packaging. Examples were given of initiatives being taken by participants within their own organizations.

Some participants felt legislation was the way to ensure compliance. Others supported incentives rather than the legislative approach. The importance of taking a regional perspective was also noted. Education and research were viewed as key measures for this sector.

4.5 Agriculture and Food Production

Participants considered the agriculture and food production sector both in terms of climate change adaptation and mitigation. Examples were given of the impacts already being experienced in parts of this province as a result of climate change.

It was suggested that the focus should be on the broader context of the food system rather than on the agricultural sector. Measures suggested for this sector involved a focus on best practices, education, research and development. There were also suggestions for promoting home grown foods.

Reference was made to Canada's implementation strategy to address climate change and the Agriculture and Agri-Food Table which is providing input on options to reduce sectoral emissions and to adapt to the effects of changing growing conditions.

4.6 Forestry

Participants noted that *forestry* refers to the industry and felt that it was important to also consider the broader context of forests as an ecosystem. In terms of forests, it was suggested that the climate change strategy should focus as much on adaptation as mitigation. The role of forests as carbon sinks was discussed.

Much of the discussion on the forestry sector focused on forest management practices, both in terms of harvesting and reforestation. It was felt that research and development along with education on best practices are the key measures for this sector. Suggestions were also made for both legislative actions and incentives which could be considered.

4.7 Fishery

The discussion on the fishery sector focused on the impact which the industry is already experiencing as a result of climate change and the importance of adaptation for this industry. In terms of suggested measures which should be undertaken, it was felt that education and research were needed to enable communities to adapt. Development opportunities were recognized.

V Recommendations

Based on the input received through the climate change consultation process, both in workshop discussions and written submissions, the following recommendations and conclusions are presented for consideration.

5.1 General Recommendations & Conclusions

5.1.1 The Government of Nova Scotia should determine "no regrets" actions immediately and implement them, including, but not limited to the following:

Incorporate education into everything the provincial government does on climate change from this day forward. Education and communication should form part of each guiding principle developed and each sector initiative undertaken.

Mobilize the research resources in the province to assist sectors in reducing key uncertainties regarding climate change and in identifying development opportunities.

Start the process of ecological tax reform - a comprehensive review of the provincial tax system to identify opportunities for incentives for desired action on climate change and opportunities to remove disincentives.

Lead by example through such measures as retrofits of government buildings, initiatives on transportation to work and purchasing decisions.

Incorporate climate change into decision-making at the individual, government, institutional and business levels through existing environmental assessment and approval processes. Ensure that policy decisions taken by government are not to the detriment of climate change objectives.

Have a public debate about what long-term goals should be.

Hold public sessions identifying specific actions for each sector and the province overall.

5.1.2 In developing actions, recognize that some initiatives may not work for all parts of the province. Examine regions within the province and assess their individual situations.

5.1.3 Immediate action should be taken by the Government of Nova Scotia to demonstrate leadership within the province on initiatives which go beyond "no regrets".

5.1.4 Nova Scotians want their governments (at all levels) to try a variety of different policy options at small scales to determine their relative effectiveness.

5.2 Guiding Principles

5.2.1 Immediate action is needed to limit the impact of climate change

This principle should be adopted with the following rewording: Immediate action is needed by all Nova Scotians to limit the impact of climate change and complement and support the action that has already taken place.

It is recognized that some action has already been taken, however the greenhouse gas emissions levels in Nova Scotia have not been decreasing so more needs to be done, and soon.

Of primary importance is education and public awareness for all Nova Scotians both on the immediate actions which should be taken and those which are already taking place. Everyone needs to understand the link between action and climate change.

5.2.2 We all need to act and cooperate

This principle should be adopted.

Participants in the consultation process agreed with the need to cooperate and given the rewording suggested for the previous principle, then we all have to act. As Nova Scotians, we need to move away from the attitude of not taking action "unless" or "until" and agree that we will all do our part.

The Nova Scotia Climate Change Strategy should identify a role for everyone. Education will be a key is helping stakeholders understand how they can contribute and why they should.

5.2.3 We need to identify the costs and benefits of proposed actions

This principle should be adopted with the following rewording: We need to identify the costs and benefits of proposed actions on social, environmental and economic levels, taking into account the costs and benefits of inaction on this issue.

Several suggestions were made by participants on the models that could be used to identify costs and benefits - Genuine Progress Index, full cost accounting or life cycle analysis. Whatever process is used, it should become a tool for priority setting, keeping in mind the long term goal of achieving reductions and what is in the best long term interest of Nova Scotia.

5.2.4 Adaptation needs to be facilitated

a) This principle should be reworded to reflect both adaptation and mitigation. The focus should be on leadership rather than facilitation. The intent of the principle should be to recognize that actions taken to date have not been enough and to reach the proposed goals will not happen on its own. The word facilitation implies motivation is there but we are not at that stage yet in this province.

b) An additional principle should be added on adaptation. There was general agreement among participants that some climate change is inevitable in this province and that therefore adaption must be part of the Strategy.

5.2.5 Actions must be designed with a strategic approach

This principle should be adopted.

Whatever measures are taken, Nova Scotia should not develop a strategic plan which is completely dependent on Kyoto ratification, which is beyond our control. We should learn from both the positive and negative aspects of the Nova Scotia Waste Management Strategy.

Set SMART goals - specific, measurable, attainable, realistic and timely.

The strategy should strive for a balance between production and consumption measures, making a distinction between them with separate targets. Consider consumption per capita as one element of the strategy and reduction of greenhouse gas per unit of product or service as a separate element.

5.2.6 Agreement on long-term goals will help set shorter-term goals

As a starting point in the development of a provincial Climate Change Strategy, the Government of Nova Scotia must identify its long term goals. A vision is needed of what a sustainable province will look like. Long term planning will mean that flexibility must be part of any measures undertaken, with opportunities for review and adjustment over time.

5.2.7 A coordination body is needed

Participants agreed that coordination is needed however, they felt strongly that no new bureaucracy should be created. Leadership has to come from the Government of Nova Scotia, at the Cabinet level, in determining how coordination could be achieved. Some of the coordination functions could come from government and others from existing organizations.

An independent body using existing structures, similar to the national Commissioner for Sustainable Development, should be identified to carry out a monitoring role: to inspire action, to identify what has worked and what has not. Its mandate should go beyond dealing with climate change to make sure another problem is not created in the process. This body should not be a decision maker.

5.3 Other Principles

5.3.1 Education and Research

While participants suggested that communication, education and building awareness should be added as a separate principle, given the importance placed on these areas throughout the consultation process it is felt that they should form part of every principle and sector activity.

Similarly, research should be considered as a tool in carrying out each principle and action. (See 5.1.1 above).

5.3.2 Other Suggested Principles

Under 3.2.3 above, a number of individual suggestions were made for the inclusion of other principles. Similar to the treatment of education and research, these suggestions should be incorporated into the implementation stage of the Climate Change Strategy, as part of the "how to".

5.4 Sector Recommendations

As recommended under guiding principle 5.1.1, **public sessions should be held within each of the following sectors** to discuss the recommendations outlined below and to identify specific actions.

5.4.1 Energy

Keeping the guiding principles in mind, make a distinction between production and consumption within various sub-sectors of the energy industry and set individual targets for each sub-sector.

The Government of Nova Scotia should review the Public Utilities Act in the context of C02 emission reduction - does the Act constrain the electricity and gas industries from taking initiatives to address climate change?

Government should be supportive of any initiatives for renewable energy, including earth energy, by supporting pilot projects and by using tax incentives.

5.4.2 Transportation

It is recognized that significant change in the levels of emissions attributed to this sector are long term in nature, based on technology. In the short term, a combination of measures should be considered including education, incentives and legislation. Land use planning issues need to be addressed. Recognition must be given to regional differences in terms of a dependency on private automobiles and the availability of public transportation.

Existing behavior patterns should not become a deterrent to taking action in this sector. Long term success will require attitudinal change which highlights the importance of education and building awareness.

As an initial step, through a public forum, a broad range of individual actions should be identified, looking beyond traditional solutions.

5.4.3 Buildings

A combination of measures should be considered in this sector including education and training on energy efficiency and incentive programs such as for home retrofits. The potential for amendments to building codes should be looked at, keeping in mind regional differences, as noted under 5.1.2 above, and the potential impact on affordable housing.

Education and building awareness should be addressed to all industry stakeholders: contractors, regulators, consumers, building supply retailers/wholesalers and manufacturers.

As noted under 5.1.1 above, the Government of Nova Scotia should show leadership through the retrofitting of provincially owned buildings or in contractual agreement in respect to leasehold buildings.

5.4.4 Manufacturing

Specific energy efficiency targets should be set for each sub-sector of the manufacturing industry or unit of product, with annual reporting requirements, tied in with the Environmental Management Systems that companies already have in place.

Identify opportunities for improvements within the industry. Regulate where appropriate to create a level playing field within sub-sectors of the industry.

The process used to identify costs and benefits of specific actions (principle 5.2.3 above) should also be used by government when making decisions on support to existing industry or in recruitment of new industry, as part of a long term strategy on the types of industry to be supported.

Whenever a sub-sector of the industry is identified as being part of the solution overall (such as a manufacturer of photovoltaic solar panels or wind generators, or existing industries in Nova Scotia) find ways to assist them in addressing emissions without reducing production.

5.4.5 Agriculture and Food Production

Consider the recommendations of the national Agriculture and Agri-Food Table on Climate Change in terms of research, education, communication and adoption of proven technologies.

5.4.6 Forestry

As recommended by the Voluntary Planning Forest Sector:

In terms of forests, the Climate Change Strategy should focus as much on adaptation to a changing climate as it does on mitigation of climate change. Priority should be given to education, research and adjustments to current forest management practices based on current knowledge. These latter should be designed as no-regrets actions, i.e. actions that improve forest sustainability no matter what the nature of the changing climate.

5.4.7 Fishery

Adaptation to a changing climate is the most important issue for the fishery sector. The Government of Nova Scotia should provide education and build awareness on the possible impacts to the industry of climate change. Preparation and anticipation are key to enable communities to adapt.

SUMMARY OF INPUT RECEIVED

I INTRODUCTION

At the request of the Nova Scotia Department of Natural Resources and the Interdepartmental Committee on Climate Change, Voluntary Planning and Clean Nova Scotia conducted a consultation process to seek the views of Nova Scotians in preparation for the development of a provincial climate change strategy. The process was co-chaired by Mr. Dan Brown on behalf of Voluntary Planning and Mr. Don Zwicker from the Clean Nova Scotia Board. Messrs. Brown and Zwicker were assisted by Voluntary Planning Taxation Sector member, Ron Robichaud in Yarmouth, Energy Sector member Lucia MacIsaac in Sydney and former Chair of the Environment and Economy Sector, Ray Cote in Dartmouth.

Consultation workshops were held in six locations around the province: Amherst, Bridgewater, Antigonish, Sydney, Yarmouth and Dartmouth. A sample meeting agenda is attached as Appendix III. The sessions took place from November 8 to November 29,1999 with a total of one hundred forty-seven participants (see Appendix I). Meeting notes from each of the sessions were sent out to the participants to verify their accuracy. An additional twenty participants took part in a special industry workshop sponsored by the Voluntary Planning Forest Sector. Twenty-eight written submissions were received (see Appendix II).

This is a report on the input received through the six workshops, the special Forest Sector session and the written submissions.

Staff from the Department of Natural Resources and Clean Nova Scotia were in attendance at the sessions as observers and to respond to questions which arose during the discussions. At the beginning of each workshop, staff provided an overview of the science of climate change and current issues.

II DISCUSSION - Guiding Principles

2.1 Examples of Principles (Work Book pages 24-29)

Included with the information which participants received prior to the sessions was a workbook *Turning Challenge Into Opportunity.* To stimulate debate on principles to guide the provincial strategy on climate change, Section 4 of the workbook introduced some examples of principles that have been used in other provinces to develop their strategies and included a series of questions to assist participants in preparing for the workshops. These questions were subsequently used to facilitate discussion during the sessions. The following is a summary of participants comments, in point form, on Section 4 of the workbook.

Also included in the following summary are comments received in writing both from individuals who took part in the workshops as well as those who were not able to attend the sessions.

Based on the input received through the consultation process, the following general recommendations and conclusions are presented for consideration. At the end of each sub-section below, are more specific recommendations for action.

General Recommendations & Conclusions

The Government of Nova Scotia should determine "no regrets" actions immediately and implement them, including, but not limited to the following:

- Incorporate education into everything the provincial government does on climate change from this day forward. Education and communication should form part of each guiding principle developed and each sector initiative undertaken.

- Mobilize the research resources in the province to assist sectors in reducing key uncertainties regarding climate change and in identifying development opportunities.

- Start the process of ecological tax reform - a comprehensive review of the provincial tax system to identify opportunities for incentives for desired action on climate change and opportunities to remove disincentives.

- Lead by example through such measures as retrofits of government buildings, initiatives on transportation to work and purchasing decisions.

- Incorporate climate change into decision-making at the individual, government, institutional and business levels through existing environmental assessment and approval processes. Ensure that policy decisions taken by government are not to the detriment of climate change objectives.

- Have a public debate about what long-term goals should be.

- Hold public sessions identifying specific actions for each sector and the province overall.

In developing actions, recognize that some initiatives may not work for all parts of the province. Examine regions within the province and assess their individual situations.

Immediate action should be taken by the Government of Nova Scotia to demonstrate leadership within the province on initiatives which go beyond "no regrets".

Nova Scotians want their governments (at all levels) to try a variety of different policy options at small scales to determine their relative effectiveness.

2.1.1 Immediate action is needed to limit the impact of climate change

This suggested principle generated the most discussion among participants with the views falling into several categories: an agreement with action being taken; a recognition that action is already taking place; that the precautionary approach be included as part of this principle; that the no regrets options be maximized first; that more information is needed before taking any action.

Immediate Action is Needed

- Agree with immediate action. Important to have a clear cost/benefit analysis by sector to help people understand what can be anticipated in each sector and buy-in. We have already seen sea levels rise locally. Added to that is the world sea level rise.

- The principle as stated is too negative - immediate is a panic situation. It should be persistent, responsible, deliberate action to deal with the issue of impacts on the economy. We know climate change is occurring - we see impacts on the wetlands for example but there may be opportunities in agriculture and tourism. Need to deal with the issue in a positive manner.

- Immediate action is needed to measure, anticipate and prepare for climate change. If cost is factored in we will never act. We are not prepared in Nova Scotia.

- Reword the principle to Immediate action is needed to limit climate change to prevent global warming from emissions. Cost is a relevant factor world wide but can't be a limiting factor if we are to leave a planet for future generations. Need quick and radical action. Resources brought to bear to limit the change will determine the impact.

- Immediate and substantive action is needed....

- Most effects will require strong measures such as drastic reductions in fossil fuel emissions and in private and public land deforestation.

- It may be more acceptable to say that adaptation action needs to be taken rather than focusing on mitigation.

- Like to see as part of this principle - *The Government of Nova Scotia recognizes that climate change will have an impact*. Put the statement up front.

- Nova Scotia should show leadership nationally and benefit from it by demonstrating how we can experience economic growth without sacrificing the environment. The words Nova Scotia should be in the title of the principle. The average Nova Scotians should be consulted

as part of this process.

- Immediate widespread and strong action is needed by all individuals and organizations...

- Immediate and sustained action is needed by Nova Scotians to limit the impact of climate change. There are also health and economic benefits to taking action.

- Have to differentiate between energy consumption and energy efficiency.

- Immediate action is not needed on everything. Redefine this principle as doing those things which are prudent, cost effective and based on science. There is room for responsible action in the retrofitting of homes, car pooling, etc. Every oil refinery could be shut down or all the cars taken off the road but that does not make sense in economic terms.

- No one region or industrial sector of the province should suffer more than others. We are just starting to see opportunities for the province in terms of offshore resources.

- There may be opportunities for other types of businesses that will add to the economy. Need more specific science to understand the implications at the regional level.

- Participants seem to all be in support of reducing GHG - the question is how much, when and how. The important principles are transparency, cost effectiveness and equity.

- There is level of interest building now as a result of Kyoto - don't lose the momentum.

Action is Already Taking Place

- Immediate action is needed by all Nova Scotians to limit the impact of climate change and complement and support the action that has already taken place.

- This principle implies that nothing has been started, however, a great deal has already been done. A lot of industries have already moved to improved efficiencies/introduce new technologies and many individuals have personalized their responsibility for addressing the issue. A number of Nova Scotia companies are taking part in the Voluntary Challenge and Registry Program.

- It is difficult to argue with the term immediate as the ball is already rolling. Any actions that are taken must be carefully documented.

- With the scientific modeling that has gone on for the past fifteen years, the numbers are getting better in terms of the projected changes that can be anticipated in temperature rise/sea level rise as a result of climate change. We may never get to a point where the models show there will be no changes in the coming century but, even without considering climate change,

there is still an issue in this country of over consumption and impacts on water and land. The big challenge is at the personal level.

- Immediate action should be taken in the context of doing a better job of public awareness. How do we increase awareness? Leadership only comes from politicians if there is public demand on an issue. The public needs to be better informed of the risks/costs which leads to public consensus which in turn leads to politicians taking action. Education through the school system is the way to start. Public awareness is already beginning as a result of these consultation workshops.

- As we recycle more, we save all that energy that otherwise would have been lost to the landfill. All environmental issues are interrelated. Need high level of environmental standards globally.

- It is hard to slow emissions quickly given society's current consumption levels and use of energy.

- Need to continue to increase awareness of those who are in a position to make changes. On the consumption side, as individuals we are poorly educated on the impacts of our choices - need to be educated to change consumption patterns. All industry is based on consumption.

- Actions have to take multiple forms addressing both industry and individuals. Some industries are high emitters but that is because they are responding to market demands for their product.

- There are two distinct issues - reduction and adaption. Clearly, there is a issue of reducing GHG emissions but even reducing emissions to Kyoto target levels will not solve the problem, so adaptation is the second issue.

Precautionary Principle

- How accurate are we trying to be with the science of climate change? There has to be a point where we say we are going to take action.

- Given what is now known, the province should identify those areas that it wishes to protect from sea-level rise coupled with extreme weather events and protect them.

- The precautionary approach, as described in the workbook text, should be included as part of the principle itself - that actions must be implemented despite the uncertainties, especially when the risks are substantial.

- Don't rely on predictions. Must work toward goals. Need to take a precautionary approach and move forward on an individual/personal level.

- The Wingspread Precautionary Principle, 1998, and as recast as the Vancouver Statement, should be integrated into this principle.

- Our science and knowledge of how the natural world works is extremely limited. To allow future generations to have a comfortable life, we should err on the side of caution.

- Any action you take now will act like compound interest. Should put out the challenge - no cost except for PR. Has to be a sense everyone is responsible, we are over consumers and in the context of the world population we are rich. Can start the awareness building through the schools.

- The principle should state that action must be taken despite the uncertainty. The highway speed limits were 80-90 km. If energy consumption increases at higher speeds, the twinning of the highways and increased speed limits is an example of an action having the opposite impact.

No Regrets

- The principle as stated is too broad. While some actions are appropriate for an immediate response, as a general principle *immediate action* may cause us to rush into certain initiatives which we will regret later. Along with the precautionary approach, we need to consider how any actions undertaken in Nova Scotia relate to neighboring jurisdictions.

- Realistically, when talking about actions, we need to think of implementation - how can it be done reasonably without creating a panic response such as a company going out of business because it could not handle imposed restrictions. Should maximize the *no regrets* options before going beyond these measures. Taking these as a priority gives us more time before moving on to more serious measures.

- This action must represent a balanced approach which minimizes market and society disruptions while encouraging all concerned commercial and industrial sectors to willingly participate.

- Focus on the no-regrets actions first - initiatives with little or no contention in order to get going. Actions could take the form of regulation or be by consensus. Regulation will only achieve results to a certain level and nothing more. Consensus takes longer but the results will be greater.

- The workbook seems to focus on "no regrets" and short term measures. Actions need to go beyond this. Some may have short term benefits, others will be longer term. Need to know what kind of reductions could be accomplished by short term actions.

More Information First

- Climate change is a global issue. Canada only contributes 2% of the world emissions and many countries were not part of the Kyoto Protocol. Would like to see more details on the impacts of certain actions on industry before we jump ahead.

- Canada and each province need to understand the impacts both in terms of GHG emission reductions and economic consequences of possible measures before developing a strategy and/or ratifying Kyoto.

- In order to make informed choices industry and the public need to be made aware of the effects that GHG emissions have on health, climate, communities and how they can conduct business.

- Before taking action, Nova Scotians need to know what will happen if we do nothing. What would be the impact of a certain water level rise or temperature rise. Research and communication/education are important elements of a climate change strategy.

- There are key uncertainties that first need to be resolved about what kind of actions make the most sense and under what conditions. The research and analysis required to resolve these unknowns will take several years to complete, with an aggressive, well-coordinated, well-funded program. Significant expenditures have already been made in a number of sectors - actions taken with climate change in mind, as an insurance policy.

- Much R&D effort is underway to get the necessary answers on climate change science but the answers will take time. Adaptability - matching policy actions to the emergence of relevant knowledge - may be a superior course of action.

Canada's Role &Kyoto

Some participants felt that the provincial government should encourage the federal government to ratify Kyoto. The US won't sign immediately but Canada should take the lead. Others felt there would be negative impacts for Canada if other countries did not sign while we did, placing us at a competitive disadvantage.

- Who is taking the leadership role internationally? Is Canada going to be a leader or a follower? How do we as a country limit another country's development - we've used up our credits so let's take theirs? How can you tell another country - sorry you can't have what we have? As a country we should personalize the issue not push it off on others.

- 20% of the world's population is consuming 80% of the world's resources - Canada is part of that 20%. 80% of the world wants to live like us. How can they be convinced to not become over-consumers? Manufacturers in North America are selling products and

technology to other countries which will lead them into the same emission problems.

- Instead of moving dirty technology from North America to another country, if we give them money for credits it may prevent other industry moving in. It is no good to just move the problem technology from one country to another. Climate change is a global issue. Should have a declining balance so everyone is working on pushing down the limits.

- Re: cost effective action - it would take a huge carbon tax to meet Kyoto targets. By 2018 China, India and South America will surpass the US in terms of GHG emissions. Canada will only be 1% of the global problem. We have to be practical about the effect Canada has on the overall emissions, however we can set an example as this country likes to do.

- If Canada doesn't ratify Kyoto what is the driver? We will do nothing and turn our attention to other issues like health care. What happens to the momentum in this country? Kyoto is a political driver.

- Canada can't afford to ratify Kyoto without other countries. The energy industry is entering a deregulated environment and needs to make choices which will not leave them at a competitive disadvantage in the future - would not be good for Nova Scotia.

- When Nova Scotia accepts its role in the Canadian response to Kyoto, make sure our economy is not sacrificed for the benefit of other parts of Canada. Our province is blessed with fossil fuels. Other provinces are blessed with water. Those who can generate water feel they have the solution. Nova Scotia would then be totally dependent on what other provinces might want to do. Hydro power has significant impact on aboriginal communities and on mercury in the water.

- To adhere to Kyoto could have a significant impact on the economy. Some industries might be required to reduce emissions by 35-40%.

- Kyoto is like buying insurance to cover a risk. In this case the insurance is doing something to reduce emissions. When buying insurance we look at the price and ask about the risk if we don't do it. In the case of climate change - let's go with insurance that is not costing too much until we know how big the risk is.

- The problem with the insurance analogy is that in this case there are no deductibles and if we are wrong we can't go back. Just as with making a decision to replace equipment, we will always think about postponing the decision and waiting for a cost/benefit analysis but in this case we shouldn't wait. Better for us to have control locally on industry than have it move to another country. We are all part of the planet.

Suggested Measures

As part of the discussion on guiding principles, participants expressed their general views on the type of measures which could be undertaken. More specific measures were identified under the sectoral discussions, section III of this report.

Building Awareness (see also section 2.2)

- Two big issues for individuals - use of fuel in their home and the choice of vehicle. These issues can be personalized such as information on ways to improve insulation in their homes or the impacts of their choice of vehicle model or their choice to live outside an urban centre and commute. A third issue could be the impacts of lowering food consumption from meat to vegetables. There are pilot projects underway but this work needs to be done on a larger basis.

- Climate change is an abstract idea. To look at the emission figures the task may seem so enormous that Nova Scotians will say what's the point of trying. Health impacts may show more immediate results.

- A distinction needs to be made between the concepts of energy consumption and energy efficiency. Limiting consumption of energy to reduce GHG emissions means restricting the economy and its growth; improving energy efficiency, particularly by implementing projects that are economically attractive, or eliminating wasteful use of energy to reduce GHG emissions and lower costs should be strongly supported.

- Often we personalize the problem but much of it is based in the industrial sector which is not prepared to take the losses. Immediate action could be accomplished through regulations. The approach with individuals should not be to make them feel guilty. With the populace, education could lead to a point where there is a mass lobby to force all levels of government to take action. Undertake measures which are fast and simple, then when government has to go to industry for action, the public is also pushing for change.

- Need to identify the points of resistance and start the debate. It is possible to identify the industrial sources of emissions and the technology is available to make improvements. How can the industrial sector be encouraged to take action?

Waste Management Model

- The green carts distributed in the region for a central composting system meant a use of petroleum products in manufacturing. If we had jobs and health in mind, we would have gone with smaller composting systems.

- The government imposed Nova Scotia Waste Management Strategy is back firing. Are there

examples of government initiated change that worked well such as reductions in smoking through advertising and education?

- For waste reduction, the province took the lead. Should use a parallel system to address climate change.

Legislation/Regulation

- Should emission levels be legislated? Major polluters are a great public cost. It is recognized, however, there is a difficulty politically in any drastic industry changes that would affect jobs. An example was given of a program in Germany aimed at energy savings for private households. A tax relief was offered for retrofitting heating systems, adding insulation and upgrading windows. This helped to reduce emissions through energy efficiency.

- Need to think of market driven approaches such as has been taken along the Rhine River where companies are taxed if outputs can be measured below their plant. If the company can pass the tax along in their price they will do so or go under. How do we help corporations make choices?

- Don't like the idea of credits. Shouldn't always be ruled by economics.

- In terms of credits - if with $1 we could reduce emissions 100 times more in another country than that same $1 spent here, it might make sense. In Europe, they do not build sub-divisions without district heating being a requirement of the builder in the same ways as they are responsible for the sub-division roads. The tax code in Canada is a disincentive for district heating systems.

- There are ways of making even carbon tax a market based initiative such as having a carbon tax on all gas products.

- What about a pollution tax and then a credit for those who do not pollute?

Incentives

- Individuals or businesses will not act without motivation. Some soft pressure may be needed to see change. Incentives are ok but should not be forever - they should be phased out, not entirely free. Need to build interest in the sustainability of actions that are taken. For companies, if they have to change methods of production or the ways of dealing with waste energy it might mean an investment cost. Companies might be interested in green energy if they invested part of the cost and government invested part of the cost.

- Incentives should initiate business-based action which will help them see results in a few years, not 25.

- There has to be a cost incentive to make changes but the message should also be that if you don't do it now with incentives then you will see regulations. An example was given of the Big 3 auto manufacturers who said to suppliers - if you do not come up to ISO 9000 standards, and now ISO14000 - by 2001, you won't do business with us.

- This raises the bar of industry practice. Similarly, the Chemical Association set high standards and removed three companies from their membership. This is the marketplace working. Individuals need to take a responsible position of regulating themselves rather than government being the regulator.

- New industry would be discouraged from coming to the province if there were penalties or a three year incentive followed by a penalty. The economy is too diverse in Nova Scotia to feel the impact of action taken by any one sector such as the automotive industry example mentioned above. Should encourage industry growth with the benefits of a clean province.

- Incentives should be used to promote research and development. Industry is taking action but government should help small businesses with R&D.

- Need to start everywhere at once with building awareness. There have to be penalties. Don't agree that tourists won't come if there was a penalty for littering. In Europe the gas tax was increased but it didn't change habits. There is a different role for government in setting a standard for individuals than the role for industry associations in setting their own level of standard. A wise government would follow the information coming from industry and support their efforts.

RECOMMENDATIONS

This principle should be adopted with the following rewording: Immediate action is needed by all Nova Scotians to limit the impact of climate change and complement and support the action that has already taken place.

It is recognized that some action has already been taken, however, the greenhouse gas emissions levels in Nova Scotia have not been decreasing so more needs to be done, and soon.

Of primary importance is education and public awareness for all Nova Scotians both on the immediate actions which should be taken and those which are already taking place. Everyone needs to understand the link between action and climate change.

2.1.2 We all need to act and cooperate

Following from the discussion on the previous principle on the need to take action, participants discussed who should be included in such action and the importance of building awareness,

considering the global context of Nova Scotia's response and recognizing impacts on the local economy. Several suggestions were made for rewording of the principle, as underlined below.

Democratic Process

- We all need to act as responsible players and cooperate. It will cost us more in the long run if we don't act and cooperate, including in terms of health. The "we" should be all Nova Scotians.

- Action starts equally with both consumers and suppliers and there should be a mutually supportive relationship between the two.

- Add to this principle the need to act positively and decisively.
  the need to take into account all social and economic factors.

- All citizens need to be engaged on the potential impacts of possible measures in terms of how they may affect the economy, employment and the standard of living. This should precede development of strategies and measures.

- This is an issue that relates to ethics and morals. In the end who would say who is going to pay?

- If industry says we have to wait for more accurate science and they don't want to be placed in a vulnerable position, then we are not all being co-operative. Can't say immediate action is needed if the perception is everything is being pushed back to citizens. Have to reduce that perception and show we are progressing together.

- We should not use as an excuse that another jurisdiction is not going forward in certain areas when in fact they may have made other choices.

- Taking the long term view, costs gets turned back to consumers. Those on lower incomes will not be able to accommodate increased costs - this needs to be considered.

- Principal has to be multi-sectoral - broad enough to not single out any one sector.

- Re-word as *We all need to act and cooperate together in a democratic process*. This gets at the costs and benefits and the concept of compensation - if someone is paying and others are benefitting, it needs to be taken into account.

- Need to take a systematic approach such as using less fossil fueled machinery, looking at opportunities for new jobs, considering the way we work in the province and identifying social benefits.

Global Context

- We all need to act and cooperate and ensure we have a voice in a national initiative.
- Have to think of "we" as the global economy - coordination of actions needs to be local, provincial, national and international.
- This principle should be a guide to expeditiously forming a planning group that represents the cross section of parties impacted by the international effort to reduce GHG.
- If Nova Scotia is only a small part of the problem in Canada, and the world, and there has been no substantial increase in provincial emissions in the past year, can we have any effect by taking action in Nova Scotia?
- Considering Canada as a whole, Nova Scotia and Newfoundland are going to be energy provinces. What other parts of Canada will be able to help, such as Ontario which has trees? Sinks are important if looking at a broad concept beyond individual provinces.
- We live in a cold country but we are also over consumers so there is room for reduction if we think in terms of global equity living standards. Most studies say we can expect changes in precipitation, a rise in sea level, a rise in temperature. Even if we do nothing to reduce emissions, we will still need to take action in order to adapt to changes.
- We all contribute to climate change so we all should cooperate. Leadership is required. The political will may arrive as grass roots keeps pushing. If California and New York can be leaders, let's be a leader here in Nova Scotia.

Building Awareness

- We all have to cooperate and understand. People need to know why they are being asked to do something - then it will be more effective and they will keep doing it.
- The bottom-up approach is a good one. Nova Scotians need education, information on how lifestyle impacts climate change. Any lifestyle changes should come as a result of people's willingness to change, not as a top down approach. People need to see the benefits of making a change. There are a lot of hidden costs in urban life styles many of which are subsidized - for example, parking lots for our car culture. Cost of parking lots are included in the prices paid for products and services but assumed to be free. Lost real estate value is also not accounted for.
- Part of the education strategy for climate change is *empowerment* - that even small things have an impact on your neighbors. Individuals working together for environmental reasons can improve the quality of life in communities and build stronger communities.

- Should follow the example of the Solid Waste Management Strategy. Nova Scotians have demonstrated a willingness to support environmental issues and it demonstrates real Nova Scotia leadership .

- The introduction of the green bins was seen as an imposition by some, others accepted them. Until we see a real impact on ourselves, such as gas prices, there won't be acceptance of the need for climate change initiatives.

- We are in a community with disincentives to act responsibly so regulated actions may be needed to level the playing field. Change is most likely if addressed both from governmental/ top down and grass roots/bottom up levels.

- Need to create infrastructure so citizens can do their part, together with regulation, such as a limit on the amount of gas. Transportation infrastructure is not in place in some communities to have any choice except a car.

- While there is room for government and grass roots cooperation, government should lead the way. It is economics and politics that drives Department of Transportation - for example, building roads without shoulders to save costs with no provision for biking trails and making it necessary to bus children to schools. Every department should have climate change as part of its mandate. On the consumer side - can't stop people from buying SUVs. Volunteerism won't work - regulation has to be put in place to deter this.

Local Economy

- There are differences between <u>all</u> as individuals and <u>all</u> as sectors. There is a difference in approach between dealing with public education in the school system versus education and awareness for the manufacturing or transportation industry.

- Solutions should be market driven. A regulated big brother approach wouldn't get as much benefit. A market driven approach also means it is spread to the rest of the world.

- We all need to act and cooperate <u>as appropriate to local industry and the local environment</u> - to give leeway to manufacturing companies or resource industries so they do not have to retrofit or take on measures unnecessarily. Care must be taken not to paint the whole province with the same brush - we should not adopt a measure which might work in an urban setting but would be counter-productive in rural Nova Scotia.

- Have to take into account the carrying capacity of an area. Emissions tradings does not take that into account.

- In Nova Scotia we should not say those benefitting or suffering should help/be helped. When looking at debits/credits, we are early in the game. Don't think debits/credits will help

anyone but the US. Hesitant to say we should act until someone else comes forward.

- Restrictions are not the answer in a "have-not" province. If you limit GHG emissions and it is not based on scientific evidence, economic growth is impacted. The Workbook - page 25 suggests that *Some will suffer economically from reductions in emissions, others will benefit.* The models should show full impacts such as placing so great a restriction on emissions that firms won't locate here.

- That those who benefit from this program should help those that stand to suffer is inappropriate in the free market system and does not make sound business or economic sense. This would be a disincentive for private industry since they would in some cases be subsidizing competitors.

- Looking at the global movement of capital, if restrictions are placed on industry they will move to another country. With a regulatory approach there will be no early action. Regulations are political.

RECOMMENDATIONS

This principle should be adopted.

Participants in the consultation process agreed with the need to cooperate and given the rewording suggested for the previous principle, then we all have to act. As Nova Scotians, we need to move away from the attitude of not taking action "unless" or "until" and agree that we will all do our part.

The Nova Scotia Climate Change Strategy should identify a role for everyone. Education will be a key is helping stakeholders understand how they can contribute and why they should.

2.1.3 We need to identify the costs and benefits of proposed actions

In discussion of this principle, participants felt that the process should include: full cost accounting - the identification of the costs and benefits of proposed actions on social, environmental and economic levels; the costs and benefits of actions aimed at adaptation as well as mitigation; and the costs and benefits of inaction.

Comments were brought forward on the importance of building awareness on why action should be taken and the timing of such actions. In addition, several suggestions were made for rewording of the principle.

Rewording

- Re-word as *We need to identify the costs and benefits of proposed actions on social, environmental and economic levels, taking into account the costs and benefits of inaction on this issue.*

- The Genuine Progress Index (GPI) being developed by the local group GPI Atlantic, is a world leader in full-cost accounting. The GPI could be recommended as a model for evaluating the costs and benefits, and measuring the progress toward the goals of the climate change strategy.

- Full cost accounting, such as proposed by the Genuine Progress Index, will facilitate change. Quality of life is not sufficiently measured by economic indices. Emissions reductions will come easier if quality of life, rather than narrow economics, determine costs.

- Need to identify and evaluate costs and benefits including quality of life.

- In terms of costs and benefits we need to include the costs of adaptation, inaction and mitigation - also consider consumptive as well as non-consumptive costs and benefits.

- Instead of identify, principle should say quantify/qualify.

- Drop "proposed" in wording of principle/should also address the "how" issue.

Building Awareness

- Re: the Workbook statement, page 26 - *To make this principle work, it will be important to work through this process and not stop whenever a sector or business or individual is identified who will be burdened by the proposed action* - we need to be aware of the concerns of citizens who fear they will be told they can't burn wood, or taxes will be increased or they will be asked to give up something. Costs and benefits should be identified but education is needed prior to implementation. Some emphasis should be placed on the affects to end-users and target them for education.

- Have to put an economic number on the climate benefit. Everyone wants to know what is in it for them. Companies do things independently - they will decide to what level they are willing to make changes. IS014000 was created to achieve a standard level of quality.

- Identifying costs and benefits is complex - consider using a formula or matrix.

- It is important tp balance the complex issues that surround GHG emissions control with the economic impact on citizens, communities (including rural) regions and provinces.

- Minimizing the costs and impacts to business, jobs and our economic development is crucial but not at the risk of damaging ecosystems and health.

- Workbook, page 26, suggests that *Businesses using more energy-efficient technologies will increase their competitive advantage*. This may be the case for new industry but what about retrofitting - what is the length of time for pay back? Need to examine both effectiveness and efficiency. On the global market, industry is looking for an 18 month pay back. While the commercial sector may be convinced of the savings, still need to prove this to the financial community so companies can get financing to retrofit.

- At Kyoto, 150 countries got together and decided to buy insurance by reducing emissions to minimize the potential risks. When buying personal insurance we always want to know the cost/benefits - that is what will move people. Why do I have to do this? What happens if I don't? What we are doing in developing a climate change strategy is buying insurance against something which may not be well defined.

- Think in terms of Term Insurance. Talk at a local level about the role of individuals in acid rain impacts on local lakes/fishing/ecotourism. Kyoto is a tiny step in the global situation. Need to look at what we can do to produce local benefits. Start with all departments within municipalities and the provincial government.

- In the Workbook - page 26 - it is noted that *According to some estimates, four times as many jobs are created by energy efficiency as by energy production.* This point has to be pushed to help build the political will for action. There are a lot of innovative things happening and there are new opportunities to be explored.

- Need to incorporate into the mandates of provincial departments that the implications on climate change be taken into account - for example, it is difficult to encourage people to consider alternative transportation without the policy support. All provincial policy decisions should consider climate change and GHG or fit under the full accounting principle.

- Need integrated, regional, long term thinking. What future do we want, for example - more human scale communities where people can walk to work. There is a spatial/land use planning issue to take things into account in a holistic way.

- Need to consider both a carrot and stick approach - not just punishments but also premiums to do the right thing.

- Transparency is very important in this principle, and let's put everything on the table.

Timing

- Immediate action is needed. Have a problem with the notion that a cost benefit analysis must

first be done to be sure one sector doesn't suffer more than another. It may take a long time to reach agreement on what is fair.

- Would like to see integrated air emissions regulations including a time schedule with an identification of those emissions which need the greatest attention and those which can be implemented over time. Some aggressive measures are being introduced re: mercury emissions. Should they come before GHG?

- The level of costs and benefits depends on how quickly we react and what type of actions we undertake.

- Maybe need to put in short term goals. Need to say we are targeting X level of growth but if we take no action on climate change then we will only reach this level of growth. It would give a signal for collective action.

- Have to take action rather than wait on the science - remember the tobacco industry.

RECOMMENDATIONS

This principle should be adopted with the following rewording: We need to identify the costs and benefits of proposed actions on social, environmental and economic levels, taking into account the costs and benefits of inaction on this issue.

Several suggestions were made by participants on the models that could be used to identify costs and benefits - Genuine Progress Index, full cost accounting or life cycle analysis. Whatever process is used, it should become a tool for priority setting, keeping in mind the long term goal of achieving reductions and what is in the best long term interest of Nova Scotia.

2.1.4 Adaptation needs to be facilitated

Participants were unclear about the meaning of this suggested principle. It was recognized that adaptation can be viewed from two points: i) coping with the effects of climate change and taking anticipatory actions and ii) adapting lifestyles to emit less. It was felt that rather than facilitation what was needed was leadership. The importance of building awareness and the use of legislation and incentives were also discussed.

Adaptation and Mitigation

- The workbook text related to this principle deals with reduction of emissions not adaptation - that industry is adapting in order to reduce emissions. There is concern that no one is thinking about adaptation measures.

- The wording of the principle needs to reflect both the facilitation of adaptation as well as reduction measures. A lot of research, planning and foresight is needed, which does not need to be totally linked to emissions.

- Need multiple choices for people to take action and a multi-level approach: local, provincial, and global.

- Need to also consider economics. How much time do we have to make adjustments? Kyoto didn't give us much time.

- Nova Scotia should be prepared for the possibility of climate change. Implications need to get into planning decisions such as the kind of forestry or agriculture we are planning for.

- An increase in temperature by itself may not be an issue but the distribution of moisture is an issue which in the agricultural industry, for example, could mean the need for increased crop insurance and has already resulted in compensation to farmers.

- A warmer climate could have positive aspects but it could also introduce new species of insects and diseases as well as the ones we already have growing more voraciously.

- Regional issues have to be factored in. Every region has different issues. Rural areas don't have public transportation so residents can't be told to take the bus.

Need for Leadership

- Though we need guideposts/concepts, what we really need is leadership - we don't need more mechanisms. Would have liked this principle rephrased to say *leadership* and to show some vision. Process/legislation/organizations won't make change but people will.

- We have to break the mold of having process as the objective. The Workbook phrase *...the current economic, political and social climate has so far not been able to achieve reductions in our emissions* says it all.

- Can't keep getting leadership by polls. Governments have to show leadership. Section 5 of the Workbook on sectoral issues identifies the nuts and bolts departments of government where action should take place. Each province may have its own solutions. Don't wait for national standards. Provincial leadership will then build to a national position. Leadership is also needed at the community level. Give people the feeling they can make a difference.

- Government has to take the lead and pull together the various players. Facilitation is everyone's responsibility.

- Facilitation has to be sustainable. Can't be political because the political arena changes but

if government doesn't take the lead then who will?

- Climate change is a matter between countries and between provinces so government is the best champion. They will decide which department is best to take the lead. Incentives are good but penalties may also be needed. NS needs to agree with other provinces what actions are to be taken within individual sectors to ensure a level playing field for all.

- Provincial concerns need to be expressed at national and international levels. If we raise our standards, other countries may raise their standards as well and companies won't be moving the problem from one country to another. It's a trade policy issue.

- Is NS participating in this consultation process because we want to or because we have to as part of the Kyoto commitment? We are lost if individuals do not understand the need.

Building Awareness

- We have government by polls because animation of the public view is so important. This is true at the international down to the municipal level. We need to educate and motivate people on climate change issues in order to create political will.

- In North American society the wealthier we get the more energy we use. If we can afford to waste energy we do. At a higher level of wealth individuals can afford to redesign their houses. There has to be a balance of education. There are issues around lower incomes and subsidization but also adaption education is needed for those who don't care.

- This is a principle of democratic action. If individuals can see the true costs, then they will adapt on their own. Society currently doesn't have a total commitment to an environmentally-conscious lifestyle.

- There are social implications to adaptation such as moving from coal to natural gas. There would also be significant infrastructure changes needed for NS Power.

Legislation/Incentives

- Adaptation needs to be facilitated but facilitation requires money.

- Nothing will change without serious action. This may mean incentives or legislation.

- The Bill of Rights does not mean people will be treated right but without it we would not have the education that came from it. Mandated legislation and education go hand in hand. A good mix is the most productive - when the price of cigarettes increases it just increases the underground economy.

- *"Reductions in GHG emissions need to be encouraged"*. Change it to be proactive - need a behavior change. Tax on industry is negative but they are the ones who have to act first. Tax credits on the other hand are positive such as for buying solar equipment or bus passes for employees.

- Do not subsidize the polluters or the end users except when promoting a switch to greener technology.

- Adaptation should be supported by research and education, not just imposition of carbon tax. Monitor the impacts over time.

- The R&D funding recently granted to Dalhousie for petroleum sector research activities should have a certain percentage of the total fund set aside for greenhouse gas reduction technologies for use in the processing, distribution and downstream manufacturing of petroleum/natural gas derived products.

RECOMMENDATIONS

a) This principle should be reworded to reflect both adaptation and mitigation. The focus should be on leadership rather than facilitation. The intent of the principle should be to recognize that actions taken to date have not been enough and to reach the proposed goals will not happen on its own. The word facilitation implies motivation is there but we are not at that stage yet in this province.

b) An additional principle should be added on adaptation. There was general agreement among participants that some climate change is inevitable in this province and that therefore adaption must be part of the Strategy.

2.1.5 Actions must be designed with a strategic approach

There was a general agreement among participants at all sessions that this principle should be a given. A number of suggestions were made for wording changes to this principle. There was also discussion on aspects of the planning, implementation and monitoring processes as well as the importance of timing and building awareness.

Rewording

- Need to add a <u>SMART</u> approach - specific, measurable, attainable, realistic, and timely.

- Add to this principle <u>and appropriate supports</u>. This could include incentives, human resources support, facilitation or legal assistance.

- Reword to say *Actions must be designed and implemented with a strategic approach.* Coordination and integration are key elements, with clear objectives and priorities.

- *Actions on adaptation and mitigation must be designed...* The focus seems to be on mitigation actions but all we are doing is delaying a rise in emission levels for twenty years.

- We need to *Establish a mitigation and adaptation strategy with goals, mechanisms and timetables, and a monitoring process.*

Planning Process

- How do you achieve the goals? Planning will be a mixture of strategic approaches and methodology. Other principles may evolve from the planning process. The methodology will become clear when we get into the planning stage.

- Need to establish clear, concise and focused principles which establish organizational responsibilities/accountability; schedules/milestones; guidelines for federal and provincial responsibilities; and estimated costs for implementation. Strategic plan must have imbedded penalties for non-compliance; legislated policing authority within government; industrial sector goals with mandatory target dates and earmarked funding for sustaining the program.

- The work book identifies situations which must be broken down to identifiable problems.

- What planning tool would that body use? It's the tool and the process versus the who. Add it here.

- One of the fundamentals of any program is to know the priorities and identify appropriate actions. Goals and objectives are critical. Need a vision - things you can control.

- All the suggested principles are building blocks. Go from vagueness to common sense to get citizens to buy in.

- It appears that a lot of activities have to take place in sync. How can we judge how that should be done?

- A strategic approach must link the local, provincial, regional and national initiatives to ensure action is taken. We have to live in the real world. Globally - whether in Beijing or Lunenburg - people can make a difference. A strategic approach is needed at the provincial level so smaller projects at the municipal level are part of reaching bigger goals. (Others suggested the provincial process should not be linked directly to Kyoto ratification as this jeopardizes addressing climate change. Goals, objectives, etc. should fit within a broader context than Kyoto such as reduced air pollution and SO2).

- Another public consultation, involving a broad base (grass roots) of Nova Scotians, should take place in the strategic process.

- Actions must emphasize quality not quantity - statistics can side track full positive action.

Implementation and Monitoring

- We need to build a strategy on facts; need to be able to rationalize/defend; move towards the goal step by step; monitor. Also need political will and a mechanism to implement the strategy.

- The Workbook - page 28 notes that *The implementation of actions should be monitored and necessary adaptations put in place.* Need to work towards goals and objectives rather than just action items so it is measurable and the game plan can be adjusted. The goals should be integrated - not isolated approaches.

- Who will implement and monitor Nova Scotia actions? Government has to carry the ball. Needs a high level of government commitment and has to permeate all departments and agencies. A specific Minister should be responsible and accountable to ensure that targets are met. Every level of government decision, policy, program needs to be run through a grid- are they supporting adaptation?

- Province continues to use NGOs as a strategic approach, such as the organization of this workshop and the use of Clean NS to develop a solid waste program. Government is afraid to stick its neck out.

- There are things which can be done which are not difficult, through a local discussion rather than trying to deal within a global context. It's a fossil fuel issue so we need to provide information to assist people with their decision making when buying furnaces and cars.

- Work should first be done on the basics. There is no magic solution. Credit trading is a quick fix measure - merely smoke and mirrors.(Others felt this was an unfair assessment of credits).

- Need to consider a balance of incentives and disincentives. Examples were given of highways being littered with fast-food containers. While the companies providing the product may be good corporate citizens, it is individuals who are littering. If money can be generated out of bad behavior such as paying more for disposable packaging, it could be used to reward good behavior.

- The strategic approach should include a way of evaluating the results of action taken against climate change so that we can learn from our mistakes and concentrate on the things that are getting results - for example, examining the subsidy structure where one program is introduced which works against another. To integrate, need different interests at the same table.

Timing and Building Awareness

- Timing is important. There are initiatives which companies could take now with pay-backs in say five years, yet it may take two years for them to decide to proceed.

- The Workbook text (page 28) suggests that the time frames should be identified for the parties responsible for implementation. There is a mismatch between the political time scale and the management time scale.

- There has to be an ongoing commitment to raise the profile of the problem and monitor what is happening. The intended goal is to contribute to the reduction of emissions. Need to get at real consumption changes.

- When considering levels of consumption - need to look at the global picture not just the standard of living we expect in NS or Canada. If we are going to get into this issue we need a plan that identifies the benefits for the environment and for investment in specific measures and not be seen to be an economic punishment. Shouldn't just be the flavor of the month but get people to understand what we can do.

- Encouraging individuals to reduce waste will result in more disposable income. They should also be encouraged to not spend that additional disposable income on items which add to the problem.

- Education and increased awareness alone are insufficient to affect changes. Behavior change will be short term without incentives. At the very least, disincentives have to be removed, government has to show leadership.

- If people look at the Issue Tables they will conclude that they couldn't reach any consensus on what the impacts will be. Most people only consider the positive benefits of warmer climate and won't take it seriously until something in their life is impacted. Need to seek consensus within the strategic approach.

RECOMMENDATIONS

This principle should be adopted.

Whatever measures are taken, Nova Scotia should not develop a strategic plan which is completely dependent on Kyoto ratification, which is beyond our control. We should learn from both the positive and negative aspects of the Nova Scotia Waste Management Strategy.

Set SMART goals - specific, measurable, attainable, realistic and timely.

The strategy should strive for a balance between production and consumption measures, making a distinction between them with separate targets. Consider consumption per capita as one element of the strategy and reduction of greenhouse gas per unit of product or service as a separate element.

2.1.6 Agreement on long-term goals will help set shorter-term goals

In addition to bringing forth points on the long term and short term decision making process, participants commented on aspects of technology and life style that should be considered as well as Nova Scotia's response to climate change as it fits in the global context.

Definition of Terms

It was agreed that a definition was needed for short, medium, and long-term as these were subjective. Some participants suggested that short term could be seen as 1 - 2 years and long term as 10 years. Long term goals should still be seen as achievable, identifiable and action oriented. Others defined long term as 100 years and short term as 10 years.

A further suggestion was that it is dangerous to consider Kyoto as short term. 2008-2010 should be medium term otherwise we will never get to early action. The principle should be phrased as early action rather than short, medium, long. (Others felt the medium term reference should be dropped - get people to take a long term vision and consider what needs to be done now)

- Short-term action is important for the public and industry to see the benefits of climate change action soon after implementing strategies. This will demonstrate to people that, in the long-term, this action is a good thing and can be accomplished.

- What does "agreement" mean - provincial government or consensus amongst society?

- Goals should be linked with broader environmental and social implications.

- Should look at what companies are already doing. Sectors should talk to those who are already thinking what short and long term should mean. Some forestry companies are planning for 80 - 100 years while others in the province are looking ahead 450 years. To a farmer, one year is long term. To a politician, long term is beyond the next election.

- We shouldn't put so much focus on the long term that we forget what has to happen by 2010. Keep this principle but clarify time frames in terms of years.

Long Term Goals

- Two ways to tackle the problem of climate change: i) from within - small scale implementations that gradually reform human behavior including environmental education and cooperation within communities to reduce energy consuming and polluting practices. Meant

to be slow and will provide long-term reform that is integral to achieving sustainability. ii) change from without is quick and provides solutions to our biggest sources of greenhouse gas emissions. It focuses on what can be done in the short term, involving large-scale implementations that provide Nova Scotians with alternatives that are sustainable and acceptable to their present lifestyles. These include cogeneration and efficient mass transportation.

- The long term goal should be that decision making be made on better information. We are making short term decisions and do not know how people will respond - making substantial plans on paper without sufficient information. Better models are needed and a better idea of strategic risks. (Others felt we have good information. Can't wait too long. Many are ready to act. Better decision making needs to be made on the information that is there).

- Should there be a principle that if the ship is sinking, then stop trying to patch it and get on with adaptation? At some stage we have to plan for the next 100 years. Some charts are projected out that far.

- Need agreement on the long term vision to help shape immediate action. Also need to do things that may not have only short term benefits, while waiting for consensus on the long term vision.

- Long term goals will affect short term goals. Long term goals are more politically acceptable. The reverse could also be true - thousands of little steps could lead to long term goals.

- We are in a capitalist society, driven by spending. Attitudes have to be addressed to get to long term goals.

- It's good to look at what is happening nationally and internationally. Trading credits will mean a tremendous amount of cooperation. Long term planning will mean that flexibility will need to be part of any measures undertaken.

- It will be a global <u>we</u> that sets the long term goals. How do we access information from global communities so we know how to react to this question?

- If 2010 is short term what then? Kyoto commitments are just a stop gap measure. It will delay the impacts and give us more time to react. It also allows time for the science to get better. If we reach 6% by the target date, then have to look at a new target. At some point we have to look at the much longer term several generations ahead.

- We need to at least get to a stabilization of emissions. The long term goal needs to be much more disciplined than the Kyoto target. Kyoto is just a way station to get into a conserver society. If there is a doubling of C02 we may still be ok as a society, but without stabilization there could be a redoubling and redoubling again. What would that mean for our children?

As a generation we have work to do on the long term goal.

- The long term goal should be to reduce emissions in Nova Scotia by 3.5 million tonnes by 2010. Looking too far down the road becomes a vision rather than a goal. The primary goal should be the Kyoto target. Nova Scotia has to contribute its share to this target. On the provincial scale, what do we look at beyond 2010?

- Agree with starting with long term goals and working backwards even if the long term goal is just recognizing the need to think beyond 10 years.

Short Term Goals

- Long term goals will be driven by international agreements. Short-term goals are best addressed by identifying those industrial and commercial sectors emitting the most causal pollutants and where best we can employ known technologies or incentives to have immediate impact. Working backwards from Kyoto, Montreal and Buenos Aires will at least bring us to a clear realization of what reductions are manageable in the near term without disrupting our society and economy.

- Development of strategic actions should not delay early, short-term steps to solidify our commitment and begin our movement to reduce emissions.

- Don't like the workbook statement *"If we can agree on long-term goals, it will be easier to define medium and short-term measures.."* Should still do short-term measures even if it doesn't lead to a long term goal. Some short term measures may make sense in their own right.

- Agree with NS taking a short term goal but has to be in a Canadian context. In the next few years it would not do us any good to adopt measures which would put us out of step competitively with other provinces.

- Minus 6% below 1990 levels won't fix the problem but it's a start - a target.

- Achieving goals will also be impacted by other motivational factors - health, money savings, and enjoyment. Short term goals are important as achievable stepping stones to engage long term commitment.

- Long term goals are met with short steps. Have to get started and work towards long term goals but they may change along the way. Don't define the small steps too narrowly so they can be changed as appropriate.

Technology

- What do we have to be doing for the long term to get technologies in place for us in the future without impacting on current industry?

- Developing countries are exempt from the Kyoto Protocol and they will want to emulate the consumption patterns of developed countries. Government has to make exporters knowledgeable about the impacts of emissions so 3rd world countries don't get into same mess - need pressure to have low emitters. Has to be some global body with the power to say if you are going to start an industry somewhere in the world, environmental impacts must be considered. This could be achieved through tariffs or credits.

- Research is needed to deal with the future. In the meantime, pressure has to be on machinery manufacturers.

- If companies will only consider retrofitting or improving technology to reduce emissions if it makes economic sense - the economics will be for the first company who comes up with improved technology. If customers say we are here in a global environment and seek companies that are environmentally conscious, that will be the market driven push.

Local Response versus Global Village

- What do we do with the 6 billion people here now - will they change their houses and consumption habits? How do you change the world? Fixing Canada is nice but the global engine treats us equally in terms of air from India, US and China.

- If you start in one spot, such as Nova Scotia, there can be a ripple effect - can set the pace. We can't think about changing the world. We won't start in this province if we wait for Canada to get on board.

- Start small and expand. Create a Nova Scotia Strategy. If we do our part and each province adopts a similar paradigm then Canada is one line. Then it might migrate to the US and South America. Can't worry about the rest of the world - have to worry about ourselves. Can use Kyoto as a way to communicate.

- Looking at long and short term goals, direct Nova Scotians first on how we can do things to benefit ourselves(quality of life improvements while also reducing GHG emissions), then communicate to the world.

- To help the global village, take new and advancing technology to those who can not help themselves. Nova Scotia has a responsibility to the global village to be a major part of the solution.

Quality of Life

- The long term vision should be on quality of life. Need revisioning to see alternative ways of living such as less use of cars.

- We are affluent, using petroleum based resources. Other parts of the world are not so affluent - rely on public transportation. Looking at the global village, the interest in addressing climate change will depend on where you are located.

- Quality of life can be a dangerous measure. Others around the world envy our quality of life. If China and India achieve our quality of life the climate change problem will be even bigger. We need to set long term goals such as no emissions so scientists can work towards them. Then maybe the globe has a hope. As a rich nation we have to lead the way.

- Quality of life is one issue, standard of living is another. Need to define standard of living. Take into account a recent UN survey of school children on what is needed for life.

- Life style values has to be addressed but who can make that decision? It is up to individuals.

RECOMMENDATIONS

As a starting point in the development of a provincial Climate Change Strategy, the Government of Nova Scotia must identify its long term goals. A vision is needed of what a sustainable province will look like. Long term planning will mean that flexibility must be part of any measures undertaken, with opportunities for review and adjustment over time.

2.1.7 A coordination body is needed

In discussion on this suggested principle, participants agreed that coordination is needed however they felt strongly that no new bureaucracy should be created. They considered the role which could be played by government, non-government organizations and the private sector, as well as what the mandate of the coordinating body should be related to addressing climate change issues.

Government

- The co-ordination body should be the provincial government, directed in its action by an advisory board made up of groups and organizations from the public and private sector along with concerned citizens. Equal and democratic representation must be present on such a board.

- Agree that someone needs to look at the broad spectrum but this may not mean a new body - the body may already be there within the provincial government. It needs to be a group with

continuity and the ability to work with different sectors.

- We have the departments and agencies in place to do the job - get on with it. May need a change in their priorities to make it work.

- There should be greater consultation and involvement with the provincial departments that have an impact on climate change activities.

- A reshifting of government resources is currently taking place. What about interdepartmental and intergovernmental coordination? This will be important. Will require new funding sources.

- Have to work in a coordinated fashion to have things adopted. Government has more than one face. For example - if a plastics plant were to be located in Port Hawkesbury it could involve the departments of Economic Development and Environment. There is room within government to realign existing staff resources.

- We should follow the same direction as the federal departments of Natural Resources and Environment.

- It makes sense for the federal government to take the lead on a national level however we should not be an international leader and be ahead of out major trading partner, the US. 95 out of 100 US senators have voted not to ratify the Kyoto Agreement because China, India and Mexico have been left out of the Agreement and therefore have no restrictions.

- Agree we should move ahead in our own back yard.

- We should look at the Alberta model of a coordinating forum - Climate Change Central. On the other hand, Alberta is a high energy-selling province. Nova Scotia may have a different mix.

- If there is an overall principle for Nova Scotians, need assumptions imbedded within higher levels of government such as Cabinet or the Premier's office rather than relying on individual departments. This could mean the Department of Environment would not have a strong enough voice to overcome the politics of new industry. Checks and balances are important to help live up to the agreements we sign.

- Education/building awareness should start with deputy ministers and assistant deputies.

- Cabinet is not necessarily the best place to negotiate multi-department initiatives. Not sure if the Premier's office is strong enough at this point. How do you get the level of coordination needed among departments especially when the federal government is involved as well?

- There is a national and a provincial Round Table on Environment & Economy. This is a good subject to add to their mandate. (Others questioned whether the Round Tables are hands-on enough for the role envisaged here.)

- There is an federal Auditor General on Environmental and Sustainable Development which is already evaluating how government is spending $150m on climate change actions. Maybe enlarge the national process.

- Coordination role shouldn't be an opportunity for government to grow. Everyone is talking about leadership. May not just be one leader but leadership should be shown at each level of government and within each sector of the economy.

- It may be difficult to identify the municipal role - they are not responsible for emission controls, have only limited tax vehicles.

- If municipalities get together they can learn from each other and other provinces and be a conduit of information for example: on items that can be added under tender contracts, an exchange of e-mail lists; information on technological developments; obtaining the services of a researcher for common municipal issues.

- Municipalities could be included in Voluntary Challenge. Some municipalities in Nova Scotia are now part of the 20% club and are going beyond 6% reductions.

- Do not need another Resource Recovery Fund.

Non-Government Organizations

- Could the coordinating body be a broad based NGO with some power to have its recommendations implemented?

- An independent multi-stakeholder group is needed to lead the effort. Behavioural changes are needed. People need to be aware how their lives can be affected and planning decisions must recognize long term influences including impacts on children and grandchildren.

- The model of an NGO providing advice to government seems to work well - combining a mix of sectors and government departments.

- A new agency wouldn't do as good as leadership from within schools, existing boards, associations. A coordinating body is needed for synergy. NGO's would need support in order to carry out the coordination role. The existing ACAPs should be strengthened so they can take on the leadership role.

- There are grass roots NGO's and university structures which could cover the networking role.

Funding should follow the function not the structure. Get the funds to the people who can take action. If its at a municipal level, then work with the Union of NS Municipalities. The functions need to be identified by Cabinet Committee. Municipalities have to work together. Most bodies are already in place but may need people identified to do specific tasks.

- The role of NGO's will be important but they will require more funding for the task. Are some existing agencies which should be involved still viable? Eg- downsizing of federally supported research.

- Need a body which is arms length from government to pull all players together, keep them involved, ensure government remains committed, and prepare a report card.

Private Sector

- If a strong framework is in place in this country perhaps a strong government process may not be needed. Voluntary Challenge is a good example where things are happening without a lot of government involvement.

- Maybe the Voluntary Challenge role could be expanded - however it does not involve small companies or individuals.

- Have to let industry get on with their business - you can't tell them how to do it better. Industry has to police themselves.

- Easier to coordinate industry than to get individuals to cooperate. There is a level of citizen education needed here such as in schools with Aids awareness.

- There may be more incentive for corporations to play this role with emission credits. Need to get down to the individual level so more than just cost savings incentives are available - for example, selling credits and the cash going to reduce taxes.

- GPI Atlantic might be considered as a candidate as a coordinating body.

Mandate

- Does this body have the ability to initiate action, regulate? What is its role, authority, strength?

- Educational aspects could be addressed by this body.(see 2.2.1 below)

- The coordinating body needs to stimulate/foster action rather than steer. Keep it small and efficient - not a bureaucracy.

- Should have representation from all sectors/stakeholders - all interests and perspectives - in an advisory fashion and produce something periodically for the public.

- Public consultation must be part of this.

- The body needs to monitor progress and make suggestions. Need an independent, non-political body with the right to measure, set goals and limits. Clearly define the role and make it non-political.

- There has to be a deadline - goals set with the appropriate body pushing/guiding/monitoring with penalties for actions not taken and rewards and R&D for good things to happen. The carrot and stick approach should be followed, realizing there will be ramifications and its all going to come with a price tag.

- There is concern about the big brother approach. Coordinating body has to have a two way approach of educating but also listening to citizens through a 1-800 number and a web site.

- There has to be a will to change. This may mean forcing industry and the general population to change through legislation. Someone has to create the initiative and enforce it such as waste reduction activity in this province or California's emission control program. Need a body to edict and monitor. May need to say by year X you will do YZ and to help you here are incentives.

- If the lead agency keeps changing there is no progress. Start with what we have in place already and strengthen it.

- Whatever the governing body, have to have a balance of government, NGOs, community, municipalities and industry but not so big a body that it fights within itself.

- Participants have said that Canada should be a leader. The coordinating body should be built on that principle. We need a champion.

- This is not a principle but an operational procedure. Too bureaucratic - a way to avoid taking action. There would be consultation and working groups but no real action. What is needed is information, networking and policy development. Coordination is needed but what happened to government leadership?

RECOMMENDATIONS

Participants agreed that coordination is needed however, they felt strongly that no new bureaucracy should be created. Leadership has to come from the Government of Nova Scotia, at the Cabinet level, in determining how coordination could be achieved. Some of the coordination functions could come

from government and others from existing organizations.

An independent body using existing structures, similar to the national Commissioner for Sustainable Development, should be identified to carry out a monitoring role: to inspire action, to identify what has worked and what has not. Its mandate should go beyond dealing with climate change to make sure another problem is not created in the process. This body should not be a decision maker.

2.2 Other Principles

2.2.1 Communication, Education and Building Awareness

Key Principle

Participants in all sessions were unanimous that communication, education and building awareness are a vital part of a climate change strategy and that a separate principle should be added.

- Citizens have to be motivated in order to make a conscious decision to act - they need to learn about the cause and effect of climate change. A general education process is needed so people become aware of the issues which leads to motivation and action. Education will have to be ongoing to motivate people to reach the long-term goals of greenhouse gas reduction.

- Personalize the issue. Make information more accessible, create awareness, modify behavior. Put in common sense terms. Communicate the goals.

- Give people the facts and let them make their own decisions. Awareness building can't be just a one time approach. Some pressure may be needed to motivate individuals into action as well as continual reminders until an initiative becomes a part of daily life. Create ambassadors.

- Suggested wording: "An education approach must be designated with a strategic approach."

- Need to talk to individuals directly to get them to think creatively about energy. May encourage scientific innovation as a result, with social benefits - adds to the quality of life and doesn't degrade it.

There were cautions against focusing only on education to the exclusion of other options:

- If we put all the money in education we will create awareness without any solutions. This should not preclude other options being tried such as carbon tax.

- Need to link education with an action strategy including a trading system and the international process. Can't afford to meet targets and loose the economy. On the other hand, we shouldn't let ourselves get into a trap of doing nothing. If we do nothing, in the long run the

effects of climate change will get so bad that it will drive action, but we shouldn't let it go that far.

It was noted that education must take into account the various sectors of Nova Scotian society.

- i) Residents: youth, seniors, the poor, the middle class, etc. With a huge part of our population turning 55 and older, the message you give to them will be very different from the one you give to youth. ii) Business and Industry: education can work with regulations to bring about the change needed to reduce our impacts on climate change.

Actions

A number of suggestions were made for taking action on this principle:

- Education must include both sticks and carrots. Systems must be designed to facilitate change, for example while anti-tobacco advertising is working, the automobile industry has missed the mark.

- Education needs to be done through user-friendly mediums: videos, brochures, speakers, website, interactive program.

- Build public awareness through a multi-media approach. Start gardens with children to make them aware of our environment. Place a strong emphasis on the younger generation - make use of cartoon characters.

- Initiatives could include going door to door to advise homeowners and businesses of energy efficiency measures and their benefits.

- A foundation paper for public outreach will be an important piece.

- Funding is needed from industry and government to support action-based educational initiatives spearheaded by non-profit organizations.

- The Department of Fisheries and Oceans has established a program in the schools. Should consider that model.

Life Style Changes

Participants recognized that education is a long term process and that the concept of climate change will be a difficult one to introduce to the public.

- It took twenty years to teach the health benefits of not drinking from someone else's glass. An education blitz is needed on climate change, starting with the young.

- Focus first on education and R&D so citizens are informed before it becomes an issue on the ballot. Have to educate citizens before the next election so voters can seek action. (Others felt it takes four generations to change attitudes. A further suggestion was that in order to see a change within one generation, we need to start at age three).

- Life style choices will be required. Global warming is a hard concept to sell to the public. The health impacts and implications for future generations are more easily understood - alarming cancer rates and breathing problems in the area as a consequence of what comes out of the smoke stacks of US industrial complexes.

- The economic impacts on the fisheries is a selling point for Southwestern Nova Scotia. If global warning affects the industry, the whole region will suffer.

2.2.2 Research and Development

Similar to education, the importance of research and development was brought forward at each session. It was felt that research and development were essential in addressing climate change and should be added as a separate principle.

- A thousand little R&D projects will get us to our final goal. R&D should be a separate principle equally funded with education. Need to get good ideas on line and being developed. This gets us further, quicker especially under a directive body. Government R&D is required to solve/relieve problems or identify alternatives.

- There needs to be a clear understanding of where in the province there are the people with the capabilities to take action and what resources they need. If municipalities need research, for example, undergrad students might be available. This also helps students work with real world problems.

- Where is the market going in terms of certain technologies and how can we use this?

2.2.3 Other Suggested Principles

It was suggested that native concerns should be added as a principle including the availability of funding and expertise.

- Native issues are currently a federal responsibility. On the climate change issue, the provincial government should also be involved.

It was also suggested that the province and municipalities should use the principle of insurance as a guiding principle in making decisions on initiatives

- Approach the issue of climate change as a significant risk which requires a comprehensive

insurance policy. This would include: education about the nature of the risk, policy measures to reduce the cause of the risk, being prepared for the possible outcomes and a climate change insurance fund - setting aside money against future risks.

Other suggestions were:

- Consider sustainable economic development, whatever actions are taken.
- Integrate climate change with an overall environmental strategy.
- Equity - no one province or consumer should be unfairly burdened with a solution.
- Preserve and promote the international competitiveness of Canada - ensure that we are still internationally open for business by incorporating market solutions.

RECOMMENDATIONS

Education and Research

While participants suggested that communication, education and building awareness should be added as a separate principle, given the importance placed on these areas throughout the consultation process it is felt that they should form part of every principle and sector activity.

Similarly, research should be considered as a tool in carrying out each principle and action.

Other Suggested Principles

Under 2.2.3 above, a number of individual suggestions were made for the inclusion of other principles. Similar to the treatment of education and research, these suggestions should be incorporated into the implementation stage of the Climate Change Strategy, as part of the "how to".

III Sectoral Discussions (Workbook pages 31 - 53)

Section 5 of the climate change workbook describes the contributions of various sectors to greenhouse gas emissions and provides examples of their efforts to reduce these emissions. Included were a series of questions to stimulate public debate on the approach Nova Scotia may wish to take to reduce greenhouse gas emissions, and limit the impacts of climate change. These questions were subsequently used to facilitate discussion during the workshops. The following is a summary of participants comments, in point form, on Section 5 of the workbook.

Also included in the following summary are comments received in writing both from individuals who took part in the workshops as well as those who were not able to attend the sessions.

At the end of each section below, are recommendations for action, based on the input received.

SECTOR RECOMMENDATIONS

As recommended under 2.1, **public sessions should be held within each of the following sectors** to discuss the recommendations outlined below and to identify specific actions.

3.1 Energy

Much of the discussion on this sector focused on the role which Nova Scotia Power is, and should be, playing in the reduction of emissions. It was felt that significantly greater attention has to be paid to the development of alternative energy and earth energy opportunities throughout the province.

Greenhouse gas emissions were seen as more of a consumption than a production issue for this sector, and it was suggested that a distinction needs to be made between the two in the development of actions. Concerns were raised on the impact to the competitiveness of this sector if Canada and individual provinces take a direction which is different than our major US trading partner.

Nova Scotia Power Inc.

NSPI's Goal

- NSPI's goal is to lower CO2 emissions in relation to kilowatt hours of electricity produced. As the company grows and as facilities reach their full commercial life, their objective is to reduce the carbon intensity of its generation. In order not to impact on rates, a 30-40 year change out of coal fired plants is anticipated. In the meantime, in order to reach emission targets, NSPI would buy credits for the difference between a combined cycle plant and a coal fired plant.

- Positive changes will be achieved through higher efficiency technologies, lower carbon intensity fossil fuels, existing renewable generation and new renewable generation such as wind/solar as it becomes competitive in electricity markets. Wind and solar require backup systems to ensure that electricity is still available at times when the wind is not blowing/ periods of little sunshine. If a facility is closed before it has reached its full commercial life it becomes a stranded asset.

- There is technology commercially competitive now using gas. Combined cycle is significantly more efficient. NSPI will be providing dual capability at Tufts Cove in the form of heavy fuel oil and natural gas. Environmental considerations and cost will determine when one or the other is used. When using gas, CO2 emissions will be reduced by approximately one third for the same amount of electricity generated as when using oil.

- NSPI current energy mix is 10% generated by oil;10% hydro;80% coal. Now at a critical

point of analyzing the future use of these fuels in terms of meeting the restrictions GHG and sulphur emissions.

- Should look at all atmospheric emissions not just GHG and consider an integrated approach to emission reductions.

Customers' Views

- NSPI is responsible for approximately 40% of the provincial greenhouse gas emissions and a similar large amount of SO2(sulphuric) pollution. They should be directed to change emission levels far more quickly.

- See a conflict in the power generator being in charge of energy efficiencies for customers. Power corporations across the country are getting out of efficiency programs.

- The Utility & Review Board has the power to modify the rules under which NS Power and others operate their businesses. Some states in the U.S. have used regulatory reform to reduce the conflict of interest between profits from burning fuel and supplying energy efficiently.

- For the utility to move faster to lower emissions - there is only one rate payer to fund it. What is the rate they will accept? The utility will be challenged to deal with GHG in a non-regulated environment where they no longer have a captive market.

- NS PI's rationale about cleaner choices costing the consumer more, is similar to one NSPC used about scrubbers and the cost per kilowatt hour on their coal plants, but the real amount was very insignificant to the consumer. A NS survey said consumers would be willing to pay more for electricity if it was cleaner.

- The imponderables in determining the cost of early asset retirement are the price of gas and the impact of deregulation. If the price of gas stays at/became significantly lower than oil, deregulation might mean someone else would come into the province before the utility's 30-40 years change outs and set up a plant to produce electricity. Traditionally, in most industries, its advantage is its ability to pass on costs. Driving a car with cheap gas, GHG emissions is not a cost to the driver but to everyone. How to internalize cost is the challenge - how to bring environmental costs back to the plant door or the household door.

- Making the right choices is often a time sensitive matter, and waiting too long creates further problems. This is evidenced by NS PI not putting scrubbers on their coal plants in the late 1970's, and in the 1980's and early 1990's building Trenton 6 without serious pollution controls, and forcing through the construction of the Point Aconi plant.

- Nova Scotia has a significant opportunity in natural gas to switch to combined cycle generation, and in a timely fashion. Imported coal is a poor choice versus local gas. Not taking an opportunity on the short term is an opportunity lost. Similarly, wind power can be developed in the medium and longer term.

Alternative Energy

- Renewables are not highlighted enough in the workbook. In rural areas of the province there are opportunities for a combination of solar and wind. Gas will become available in some areas of the province, but those without access need other options.

- The province needs a non-fossil-fuel based indigenous energy industry.

- Infrastructure, public awareness, economics all barriers to better take up of renewables.

- There are opportunities for: wind power in rural areas; passive solar in new home construction encouraged through tax or economic instrument; district heating in urban areas; tidal if it can be done without impacting the ecology; small scale hydro on rivers which are not salmon rivers.

- The installed cost of wind generated power is higher per kWh but the cost of emissions must be factored in - the true quality of life. Need to place a dollar value on the jobless, sickness etc. to find the true cost per kWh. Private power plants might be interested in alternative energy sources if there were credits available.

- There are many communities in Nova Scotia with a density such that it may be feasible to have a district heating system for the community, possibly centered on a co-generation plant which generates electricity for the community, with the waste heat distributed through the district heating system.

- District heating is an option in urban areas, using waste steam to heat neighborhoods, but there is a federal tax disincentive - the capital depreciation for steam systems is 30 years compared with 4 years for other systems.

- The economic viability of district heating was questioned. Saint Mary's and Dalhousie universities have backed away from this option in favour of natural gas. (Others felt district heating pipes should be put in place when the streets are dug up for natural gas. The Tufts Cove cooling water is treated as waste heat now).

- Charlottetown's district heating system was not referenced in the workbook examples.

- Wood chips may be used more in future than wood. There is concern that hard wood trees are being used to produce chips. Respiratory problems are rising with increased wood stove

usage. It's an educational issue and one of national standards for wood stove particulate emissions.

- It is a spurious argument to suggest that burning biomass does not add any additional GHGs to the atmosphere. The problem is that it releases them quickly over a very short time frame, whereas natural decay releases GHGs very slowly over a long time.

Petroleum Industry

- To reduce GHG emissions from the production and use of oil and natural gas on a global level, GHG emissions must be dealt with primarily at the level of consumption.

- An example was given of a petroleum refinery which emits 9% of the crude oil processed as CO2 for the energy to convert crude oil into finished petroleum products. The other 91% is emitted by the consumers of the petroleum products through combustion of the hydrocarbons into water vapor and CO2.

- The petroleum industry is a partner on alternative fuel projects, have mailings to credit card holders on how to improve efficiencies, invest a lot in R&D around the world, belong to the Voluntary Challenge and Registry Program, are involved with the national climate change process, and have produced an options paper on actions they can take. The industry feels it is premature to take significant action until more is known about the science. The concern is that they will be left with stranded assets.

- A recent study indicates that it would cost billions for the petroleum industry to reach Kyoto targets. The industry will be hesitant to take action until their major US competitors do. Whatever is initiated in this province has to be adaptable, flexible and based on science, letting industry remain competitive. The petroleum industry is in favor of a number of options but at the right time and place. There is no easy solution. Any major actions at this time would mean a cost to the consumer and the closure of refineries with a loss of jobs.

Existing Initiatives

- For small and medium size businesses an example was given of the Eco-Efficiency Centre in Burnside Industrial Park, Dartmouth, to help small and medium size businesses improve their environmental performance, including the reduction of GHG emissions, while not adding to their overall costs. When businesses were first contacted they all had the same message - we want to do the right thing but it has to be reflected in our cash flow. Everything we do is transferred into the cost of the product and the customer pays.

- An example was given of a community education program with small business re: water and energy usage. In a follow-up to the initial visit it was found that only 30% had made any changes. They said that beyond $1,000 they couldn't afford it.

- The Morgan Falls Power Co, New Germany, a private hydroelectricity production company, theoretically was not to hurt fish in the LaHave River but in reality fish have been killed during construction and in the operation with impacts to the sport fishery. This should not be referenced as a success story.

- NS has shown leadership in reducing landfill methane generation by imposing province-wide organics bans for landfills.

- The Goldboro Energy Park is adjacent to the Sable Offshore Energy Project onshore natural gas processing plant. It is earmarked as a Kyoto Accords Demonstration Project - looking at how best to apply clean air technologies to the site developments as they evolve.

Measures

For its part, Nova Scotia Power is pursuing three key measures: education of the end user, improved energy efficiency in the production/distribution of electricity and a move away from the more carbon intensive forms of fuel as the company grows and as facilities reach their full commercial life. Suggestions were made for the province and the utility to place a greater emphasis on renewable energy and earth energy. Much can be done through education, research, incentives and the exploration of development opportunities.

Alternative Energy

- A more dynamic approach to investment in the development of new, sustainable energy sources is required. There is tremendous potential for Nova Scotia to develop a market niche in encouragement and development of renewable energy sources - for instance, Denmark has become a world leader in export of wind energy technologies. There is a potential for district heating systems in urban areas of the province.

- Adopt a level playing field for all sustainable energy production; steam, solar, thermal energy storage, biomass, etc. and encourage diversification of supply. (Others felt there are potential negative economic impacts for the province in this approach. The challenge is to find ways to maintain and grow our economy while addressing climate change.)

- Remove regulatory barriers or other impediments to actions that would reduce emissions, for example, the removal of restrictions that prevent the sale of excess, self-generated power to other industrial users.

- If an Energy Council is mandated by the provincial government as included in the Government's platform, strongly suggest that renewable energy (wind power, solar and photovoltaic, tidal power, wave power) and Earth Energy be part of the mandate.

- A N.S. Energy Strategy should be developed and adopted, with a forward looking commitment to energy efficiency and renewable energy.

- Enacting legislation to allow NUGs to wheel their power across Nova Scotia Power's grid

would encourage the development of green power in the province.

- If homeowners develop their own power system they should be able to make use of it themselves and tie into the grid. NS Power could then sell as green power to customers outside the province. If Nova Scotians are willing to pay extra for green energy that should be an option, if not the additional costs should be added to the overall rate system.

- Some of the money the province realizes from gas royalties should go to a fund to support projects such as retrofitting houses for the poor or alternative energy. The funds should be earmarked to the sector and not placed in general revenue. Have to look at the energy sector as a area for new job growth for youth and the underemployed. There has been a great deal of research on alternative energy but not much has been installed.

- Consumers have a choice on renewable energy technology such as solar hot water. Need to help consumers understand the pay backs. There is no reason why every house in Nova Scotia doesn't have solar panels. There is a quick pay back of 5-8 years and there are local manufacturers. Government should encourage this. There is an excellent wind regime in the province. There are opportunities to partner with European wind farm manufacturers. The Farm Loan Board could allow farms to interconnect with a windmill.

- Solar water heaters are one of the most cost-effective methods to reduce CO2 emissions by displacing electricity consumed in domestic water heaters. They are reliable, efficient, and are manufactured in NS and make sense in their own right given favorable financing. The Government of NS should provide low interest, long term financing of solar water heaters and other renewable energy technologies that reduce CO2.

- The trapping of landfill methane could provide a new fuel source. Generating new sources of energy will become increasingly more important and communities should be encouraged to look at new sources of renewable energy sources. Must be security of supply in an environment in which consumers can make choices.

- More effort and money must be put into alternative energy sources such as wind and solar power. This is a must as our non-renewable energy sources will not last forever. We must start preparing now for the inevitable. Not only will this reduce our dependence on fossil fuels, it will help create jobs, stimulate technology, and reduce our impacts on the environment. The energy sector, especially that of the non-renewable energy side, should help fund education on climate change as well as projects and research that support renewable energy sources.

<u>Education</u>

- A lot of GHG emissions could be changed with incentives and awareness building on why certain actions are important. Homeowners have old stoves burning wood, coal and garbage so are also contributing to emissions.

- Education is needed for the operators of commercial establishments in terms of light levels,

quality, fluorescent versus incandescent. In European hotels the lights in the stairways and halls shut off.

- Education needs to be done through user-friendly mediums: videos, brochures, speakers, website, interactive program.

- Build public awareness through a multi-media approach. Start gardens with children to make them aware of our environment. Place a strong emphasis on the younger generation - make use of cartoon characters.

- Government should not be promoting the use of one energy source, such as gas, over others. That should be a private sector responsibility.

- In addition to the success stories in reducing GHG outlined in the workbook - page 34, need to concentrate on Nova Scotia examples, including those using renewable:

  - Springhill minewater geothermal - has become recognized as a Millennium Eco-Community, which appears to be the only one in Canada successfully utilizing a renewable energy resource.
  - Amherst - success with ground source heat pumps for the residential sector.
  - Federal Women's Correctional Centre, Truro- completely dependent on renewable energy in the form of Earth Energy - supplies all the heat and some cooling - most efficient Women's facility in Canada.
  - New high schools at Horton and Milford - show places for renewables in our province - extracting heat from the ground and using for heating and cooling.
  - Any high water table community.
  - Surrette Battery is having excellent results with batteries for solar/wind application.

<u>Research & Development</u>

- Enhance government and industry support for research, development and demonstration projects such as low emission technologies. This would help industries be at the leading edge of energy and emission intensity of production and provide opportunities for export of the technology.

- The development of the Sable Island natural gas resource could lead to new sectors and growth for the province such as the development of a world class petrochemical industry.

- Some participants felt that the R&D should be market driven. Others felt that traditionally the private sector does not pay for R&D and that the proposed provincial Energy Council should be responsible for this - to be responsible for the distribution of funds based on applications for projects with long term benefits. To generate a fund for education and research, consider the model used in the Resource Recovery Fund of bottle refunds.

- We have technology but we need to use it. In 1992 the technology was available to extract methane from coal mines in Cape Breton but it wasn't used.

- Look at incentives for mature technologies and for straight research.

- The provincial government should identify all communities where district hearing might be feasible, approach the municipal governments of these communities to gauge awareness and interest and come up with a draft district heating plan, find a way to facilitate the implementation of a district heating system - perhaps by piggybacking with the installation of natural gas lines, or by making a plan in which the district heating system is a pre-condition before natural gas can enter the community.

- There is no central body to ask about renewable energy. Body of science needs to become a resource so information is available.

- There are opportunities to develop new technology in this province for export - for example the production of a super efficient light bulb. Its needs to be acceptable to consumers. Low flow shower heads are an example of a product which was not well received by many consumers.

- There are a number of opportunities for Industrial Cape Breton which could be explored:

  - look at opportunities for wind power
  - consider the short term employment/economic benefits of a relamping program - going door to door to replace them
  - establish a plant to manufacture bulbs for the local program, then expand to province wide markets and beyond.

<u>Legislative/Incentives</u>

- Incentives, particularly for larger users, are sometimes necessary to affect significant change.

- A program similar to the Mainstreet Facade Program is needed for energy related items.

- Look at deregulating the electric power grid.

- The model of a home office is a way to reduce emissions. As the electricity industry is deregulated in this country it should take this model into account.

- Tax incentives for solar domestic hot water make sense.

- Subsidies to fossil fuel production lowers its cost and prevents renewables from serious consideration by users. Residential solar hot water retrofits have an apparently long pay back when considered exclusively from an economic viewpoint and ignoring the taxes paid for the fossil fuel subsidies. If the subsidies were apparent and formed a viable basis for tax reduction when purchasing the renewable, the choice would be placed simply in the hands of the consumer.

- Government should stop subsidizing industries that use a lot of fossil fuels and are heavy fuel users.

- Tax incentives and labeling of energy efficient equipment should be pursued, translating into reduced energy use.

- There should be tax incentives for homeowners to consider alternative sources of energy such as a tax credit for buying solar panels - for use in new construction or retrofitting. There should also be incentives for the private sector to carry out R&D on new products. R&D is needed on solar heating.

- Encourage action by tax incentives and fines for polluters/non-compliance. All government departments should set high standards for themselves.

- A tax policy on energy and energy users must be broad-based and reflect all corporate taxes, sales taxes, payroll taxes, etc. to effectively use tax incentives without evolving a tax system which is detrimental to our competitive edge in the lucrative US marketplace.

- Canada is responsible for emissions in Third World countries through certain projects funded by CEDA. This should be addressed.

Nova Scotia Power

- A reduction in CO2 per kWH can be achieved through reducing line losses, running plants at optimal efficiency, communications programs to help customers with conservation. There would be a big hit by converting power stations from coal to gas - running on gas would cut emissions in half for that facility. As the company grows and as facilities reach their full commercial life, the objective is to reduce the carbon intensity of its generation. In order not to impact on rates, a 30-40 year change out of coal fired plants is anticipated.

- The corporation is against carbon tax and a cap and trade system. Would like to try measures like emission trading without caps. The utility is involved with some early emissions trading initiatives.

- If government mandates that car emissions have to be cut in half then utilities should be told that they should also cut emissions in half. If we are going to make a societal shift in order to reduce GHG emissions how do we engage the utility?

RECOMMENDATIONS

Keeping the guiding principles in mind, make a distinction between production and consumption within various sub-sectors of the energy industry and set individual targets for each sub-sector.

The Government of Nova Scotia should review the Public Utilities Act in the context of C02 emission reduction - does the Act constrain the electricity and gas industries from taking initiatives to address climate change?

Government should be supportive of any initiatives for renewable energy, including earth energy, by supporting pilot projects and by using tax incentives.

3.2 Transportation

It was recognized that transportation is a large component of the greenhouse gas problem and that there are many opportunities to be explored in this sector to reduce emissions. Within ten years we will have new technology and we will need to adapt, but over the longer term, we have to look at how and why we use transportation. This will involve an examination of our personal transportation choices as well as the movement of commercial traffic.

Personal Choices

- Nova Scotia has consistently made the wrong choices with respect to transportation policy as rails were uprooted and subsidies given to the trucking industry. There has never been any incentive to curb automobile use. On the other hand, Nova Scotia has many success stories, and has been typical of North American cities in terms of transportation policies.

- Cars are sacred to most people. Transportation is going to be a real problem area to reduce emissions. Smaller cars are a personal choice in terms of safety and certain driving conditions. Van pools are more economical. Bicycles can't be used by everyone.

- There are predictions of more cars on the road, annual increases of 6-7% in commercial traffic for the next 15 years, speeds increasing not decreasing and roads being designed for greater volumes and speeds.

- Several years ago it was said the way to reduce emissions was to reduce speed but instead we have gone to higher speed limits.

- Fuel costs are low here compared with Europe. In places where fuel costs are high they don't drive frivolously. We can only get to the Halifax International Airport by car. Intermodal transportation is needed. Have to move from the American mentality - try to be unique.

- Companies have modeling tools to help them make rational decisions based on price. Individuals don't have those tools. Take our food choices for example, what goes in our grocery carts - we may say it is based on price but marketing also impacts our choices. The amount of energy required for individuals to make informed decisions is enormous. Price can be used to create learning opportunities but don't count on price to sustain behavior.

- Reference to tonnes per year in the workbook table is erroneous.

Commercial Transportation

- The workbook does not talk about commercial transportation. Up to 87% of goods produced in Nova Scotia go to markets 1000 miles away and the bulk of consumer goods, such as furniture, are imported.

- In terms of emissions/energy use, rail is a better option to ship freight than trucking but the cost is at the plant door. Companies are looking at just-in-time delivery to survive.

- The North American rail industry is not fully utilizing their assets to move greater volumes. Not sure how we can influence this in Nova Scotia. It is more efficient to use truck for short haul in terms of emissions.

- The federal and provincial governments need to show leadership in this sector, instead we have seen cuts to rail service and higher speed limits on new highways.

- A recent APENS publication highlighted the transportation sector and rail versus trucking costs. The real cost of transportation is highway maintenance. Need to put real costs on our assets.

- Any kind of climate change in the Atlantic Provinces could have dramatic impact on bridge construction which is a major component of highway infrastructure costs. A recent edition of National Geographic highlighted a case in Honduras where a major bridge is now on a dry river bank.

Land Use Planning

- The biggest issue in transportation is not listed in the Workbook - where people live and are encouraged to live. Need a question on urban/suburban land use. Municipal zoning and planning has not been referenced as an important contributor.

- Stated at a recent Toronto conference - aside from any environmental benefits, municipal units could save 18% by nodal developments (identifiable village type core) and re - urbanization (increased population density or use of vacant land in current urban areas). There are savings on the cost of transit, roads, sidewalks, water and sewer lines, school busing and utilities.

- While there was a comment that rural/suburban development was inefficient as it is subsidized by the urban areas others suggested that many people live outside the cities because they cannot afford to live in the urban areas.

- Current urban and regional planning is void of energy and environmental considerations.

Public Transportation

- Public transport needs to be supported more fully rather than undermined through funding cuts of recent years

- The Workbook is very good for rural Nova Scotia but does not address city-related issues. There is not action in the Workbook that would improve mass transportation or to encourage municipalities to get involved in climate change. Belgium refused to budget for new roads but did provide free buses and bicycle routes. Reports indicate that the debt went down and new businesses resulted.

- On the benefit side would be an action that would enable residents to bike or walk to work. Urban planning is geared to the car. It will take a long time to change our habits of driving children everywhere and using the car for shopping.

- In Metro Halifax subsidies for transit have decreased and fares increased. Some felt this was due to lack of use and that awareness must be increased and ways found to attract users. Another viewpoint was that ridership declines over recent years have more to do with reduced services and higher fares than the public's willingness to take alternative transportation and there are real opportunities to reduce private vehicles in urban areas.

- The consumer price index for public transportation has gone up very much faster than the overall consumer price index and than costs of private transportation - that discourages use of public transportation.

- The fact that the Halifax Regional Municipality would own parking garages demonstrates there is no plan to promote mass transit despite the knowledge that automobiles contribute significantly to greenhouse gases. Cashing out of parking subsidies can discourage automobile driving.

- Transit-friendly planning of new developments in HRM must occur. 3rd lane addition to MacDonald Bridge has simply added to the infrastructure promoting wasteful use of transportation fuels. If Go Plan accepted by HRM Council, we will be leading the way for new developments in more rural areas

Technology

- The impact of transportation technology over the next ten years will be significant. Nova Scotia has to understand how decisions made elsewhere on emissions affect us here and whether we can/cannot participate. A lot of work needs to be done here.

- Hybrid cars will be on the market by next year. A large research and development effort is underway worldwide on transportation, part of which is looking at adaption of technology (and missed opportunities) and reduction of GHG.

- We should take advantage of new technology being developed elsewhere such as the Ballard

fuel cell. Consumers need to be aware of such technology in order to create a local demand.

- Manufacturers are producing cars much cleaner - use less gas - but there is an increase in the number of cars on the road. While there have been gains in individual car emissions there has been a net loss since there are more cars.

Measures

Longer term measures for this sector include managing demand for transportation. In the shorter term, it was felt there was a need to examine land use policies which encourage the use of automobiles and to place a greater emphasis on public transportation. Suggestions were also made for education and building awareness as well as legislative action, such as vehicle fuel efficiency and incentives for car pooling and home offices. The impact of new technology was also noted.

Transportation Policies

- There is a real opportunity to reduce air pollution and improve the health of Canadians by improving the infrastructure needed to ensure safe and active (walking, cycling) transportation.

- Expect we will see carbon tax but it will have no impact on emissions. It will however impact the economy. Have to look at more than technology of vehicles. Need to look at managing demand for transportation which can be addressed in fifty years but not the short term.

- Infrastructure should include the transportation system and services not just road building.

- There has to be a change at the policy level away from building highways to reestablish railways which are more accessible to a broader range of the population. How can we achieve a better balance? Has to be taken into consideration the next time decisions are being made on expanding a highway.

- A provincial transportation strategy has just been completed through a Voluntary Planning working group of industry and government and a broad-based Advisory Committee. One of the action items under this strategy is to look at the transportation options that address GHG and other air emissions associated with the transportation sector

- Within urban areas, the bicycle is the most efficient mode of transportation. Consider provincial legislation requiring that all municipal governments with urban areas above a certain density must have a publically approved plan for encouraging more bicycle use. There are now electric or power-assist bicycles on the market, which could expand the population who might choose to bicycle, by making it easier to go up hills.

- The "alternative transportation policies" listed on page 63 in the workbook appendices have only limited application in Nova Scotia. They address issues in very large urban areas and would have little effect in NS, even in the Metro Halifax area. Don't go back to solutions of the 70's to solve the problem - for example, people are moving away from van pools as they

want more freedom.

- Research on how to help rural people reduce their transportation energy use must be done equity must exist for urban and rural transportation plans.

- It is important that responsible governments examine regions within the province and assess their individual situations.

- There should be a regional breakdown in terms of consolidating policy and program alternatives.

- We have been shutting down bus routes and rails in the province and building more roads. Other developing countries are moving to light rail. Need to look at revitalizing rail for freight movement and rail/bus for passenger movement.

- Stop expanding existing highways, stop building new highways, and transfer the funds into beginning to establish a provincial railway network. Long-term vision: a balanced transportation system where there is a provincial rail network on all major transport routes currently served by 100 series highways, and the 100 series highways have been reduced, leaving the network of smaller highways and roads.

Technology

- Need labeling by car companies to say what emissions are per vehicle. Have very few opportunities in Nova Scotia to have an impact in this sector. Natural gas will provide some opportunity as a fuel for vehicles.

- In Europe, car sizes are decreasing and gas companies are not going out of business. With a growing population and a desire for more than one vehicle, there is no danger of a lost of business.

- The technology for electric cars is improving. California has set a deadline by which time car manufacturers must sell a set percentage of electric cars and the marketplace is scrambling to meet the requirement.

- Ballard Power Systems Inc. has developed a fuel cell engine which has been tested in transit buses in Canada and the US. It would be great to acquire one and take the lead in the use of this technology. Is it possible to encourage environmental polices for transit operations? (It was noted that a consultant has done work locally on fuel cell technology. It could be marketed and used here).

- Hybrid electric vehicles are dual-fuel, electric or gasoline. Since the electricity still must be generated and Nova Scotia's generation mix is predominately fossil, it is unclear how running HEVs will make a significant impact on provincial GHG emissions. Furthermore, the trend in North America is to bigger and less-efficient automobiles.

Land Use Planning

- There is a need to examine land use and urban planning policies in relation to climate change. We continue to use planning practices which facilitate and promote automobile use and thus contribute to an ever increasing problem. We may need to rethink going to some higher density - this would require a very long term attitude change. Look at zoning regulations, town planning - take GHG into consideration. Consider how we build and design highways - think about how to move people and goods more efficiently not just build roads. NS has to compete in a global marketplace.

- Tax credits can be given to Danish-style "co-housing" developments that are less energy intensive, encourage car-pooling and van-pooling, can dramatically reduce per capita GHG emissions and strengthen communities at the same time.

- Attempts to control rural/suburban development could be a tax on the poor if not properly implemented and would impact on an individual's freedom of choice making it difficult to get Nova Scotians support for making changes. Promotion of changes in consumption habits and wasteful practices can be done in a manner which is more conducive to a better quality of life rather than loss of it.

- It is a matter of urban planning where residents move to the outskirts of the City which results in increased transportation. Active transportation in the Sydney area is dangerous because of the highway design. The Green Link Park Committee is trying to address the issue.

- Overall community planning must be more conscious of environmental impacts.

Public Transportation

- Public transport is absolutely essential in cities such as Halifax and Sydney. We need more money put into trains, buses, and bike lanes. The mentality of one person to a car is not going to help us reduce our green house gas emissions. By diverting money spent on road construction for more and more cars to travel on, we can put this money into bettering public transit. We need the carrot and the stick to work together to solve the transportation problem.

- There are areas where several municipalities have or can cooperate to improve mobility and transit between jurisdictions.

- Government should lead with precedent to bike lanes, mass transit and light rail over highways.

- Government must take a lead, by educating and making an example, by encouraging discussion and development of alternative transport options for both the public and its own staff. As an example - an immediate speed limit reduction to 90kph and a one year moratorium on new road building, until all possible alternatives can be debated.

- Push the banking system to sell location efficient mortgages, allowing banks to bend the 30%

rule to take into account a site's proximity to public transit and the like.

- Dedicate fees on automobiles to public transit and encourage merchants to provide transit passes rather than parking stamps. The third lane on the MacDonald bridge could be dedicated to carpools and buses, as in Vancouver and other cities.

- To have bus lanes only would be a municipal cost which would be passed on to taxpayers and discourage individuals/companies moving to the province.

- Cycling lanes in rural and urban areas would increase tourism, improve health and reduce emissions. The Sydney boardwalk is well used.

- Consider water transportation (e.g.- across NW Arm)

Education

- Find a mechanism to nudge commuters towards efficient use of their car. Consider education - talk about necessary versus elective trips; regulation; enforcement of speed limits. An incentive to travel with more than one in a car.

- Reducing speed limits alone is not sufficient - the maximum speed limit in a car should also be changed.

- There are things that can be done at the local level to bring about change. One area is vehicle idling. This is a significant part of the problem and a growing problem. There are a number of actions that can easily be taken to reduce unnecessary idling and the payback is almost immediate. Changing the operation practices of provincial, municipal and private fleets to reduce unnecessary idling is not difficult and results in immediate operational and maintenance savings. Reducing private vehicle idling is more difficult. Also, vehicle options which promote idling, such as remote car starters and air conditioners are increasingly popular. Awareness is needed. Perhaps some action through municipal by-laws and/or taxation are options.

- An example was given of initiatives introduced to lower emissions for a fleet of service trucks - linked to litres of fuel used/vehicle/customer served. Measures include increased maintenance, monitoring, employee education. It's an awareness issue.

- Government must disclose full cost accounting for transportation, including roads, congestion, accidents, police services, etc. to inform people and to help them make appropriate choices. This information would put into context a suggestion that shifting from road to rail could save $10 million per year.

- The government platform called for revenues derived from road taxes to go to improving roads. This is short sighted. The revenues should go to encourage other means of transportation, including mass transit.

- Research is needed on improved emission standards and testing. Also, education such as a booklet on emissions per vehicle type for consumer awareness when buying an automobile. Consumer demand will force car manufacturers to work on emissions.

Legislation and Incentives

Fuel Emissions

- Global warming is as important as acid rain and legislative action is taken, there will need to be assistance to facilitate action. Britain introduced smokeless fuel by legislation accompanied by grants. Have to study where we can get the biggest impact such as taking CO2 out of the power plant stacks or long term legislation to reduce emissions from cars - a carrot and stick approach.

- The most effective measure would be for Canada to mandate that vehicles be more fuel efficient.

- In a table titled *Estimates for greenhouse gas emissions reductions from the actions proposed in Canadian solutions* (circulated by a participant in one workshop) improvements in fuel emissions are clearly a top element for Nova Scotia to work on. Not much we can do about other items suggested under transportation policies on the chart.

- There is concern about the increasing amount of diesel fuel used for moving freight by using trucks rather than trains. Emission standards for diesel operated vehicles must be enforced. (Others noted that diesel is a more efficient fuel from a GHG perspective with less emissions per liter).

Carbon Tax

- Suggested that carbon credits be established. Those who over use their allotment would pay, under-use would results in credits.

- A carbon tax on fuel should not be accepted. It is a regressive measure which would have little impact on GHG emissions. A federal carbon tax on fuel would result in a net outflow of capital from Nova Scotia's economy and the province would not be able to adjust the level to suit the local circumstance.

- Need to be cognizant of what might/might not come down as part of a national climate change plan such as the simplistic carbon tax option. Carbon tax is not an option in Nova Scotia because of our demographics, our import/export patterns and geography.

- Nova Scotia may have to look at mandated modal shift and carbon tax - like regulations to force goods to be moved by train versus truck or passenger movement by train versus own car - but do we want to live like that?

Insurance/Licensing

- Government leadership must include a review of financial credits, incentives and disincentives for sustainable transportation practices.

- In BC emission standards are tied in with insurance. This should be considered in Nova Scotia.

- The carrot and stick approach might work in this sector - licensing and insurance incentives for those vehicles which have lower emissions and penalties such as through the tax structure for vehicles with high emission levels or mandatory emissions testing as part of annual vehicle inspection.

- Nova Scotia should stand up to Ontario car manufacturers - big vehicles are dangerous (block view of vehicle behind) and are gas guzzlers. Need the right size of vehicle on the road - encourage a move to smaller vehicles through sales incentives, increased license fees/tax.

Car Pooling

- Businesses need to offer flex hours so workers can match their hours with family members and allow for car pooling.

- There are disincentives to car pools. Should make it as easy as possible for car pools to work. Allow it to happen without restrictive regulations for operators. Use parking lots in suburban malls as free parking and catch a shuttle downtown.
- Transportation incentives for commuting to work should be looked at as they work elsewhere (e.g.- dedicated lanes and preferred parking for multi-passengers).

- Park and Ride makes sense - good facilities and schedules are needed.

Work At Home

- With changes in technology, a home-based workplace is feasible for many workers. Companies should be encouraging employees to work from home.

- Companies should encourage staff to work at home 3 days/week. Most people in traffic line-ups go to an office to sit at a desk/computer.

- Encourage discussion of telework and look at the possibility of developing telework centres in the suburbs.

RECOMMENDATIONS

It is recognized that significant change in the levels of emissions attributed to this sector are long term in nature, based on technology. In the short term, a combination of measures should be considered

including education, incentives and legislation. Land use planning issues need to be addressed. Recognition must be given to regional differences in terms of a dependency on private automobiles and the availability of public transportation.

Existing behavior patterns should not become a deterrent to taking action in this sector. Long term success will require attitudinal change which highlights the importance of education and building awareness.

As an initial step, through a public forum, a broad range of individual actions should be identified, looking beyond traditional solutions.

3.3 Buildings

It was recognized that the buildings sector is a big contributor to greenhouse gas emissions in Nova Scotia and at the same time actions related to energy efficient buildings are probably the most achievable of those within all the sectors.

General Comments

- There seems to be no long term plan for urban development. Detailed area plans and planning strategies were to be reviewed every five years but we are at year eleven.
- It appeared that the pages in the work book did not relate directly to this subject.
- It's a challenge to balance environmental issues and people's expectations.

Energy Efficiency

- This sector is a big contributor to GHG in NS. Energy efficient buildings is probably the most doable action of those within all the sectors, and there are not many barriers. The technology is available now and will only get better. There are a lot of success stories in Nova Scotia with energy performance contracting. New Brunswick is leading the country in this measure. Institutionally, the NS government is a large property owner. There is an estimated $150m to $200m investment which could be made to make government buildings more efficient. This could be paid for through the energy savings that would accrue. One barrier is potential staff and administration reduction. There are opportunities in rinks and fire stations across the province.
- How do we get government leadership without being heavy handed. We downsized government so much without asking questions of how to do without a public utility. It is not heavy handed to do fuel efficiency.
- In order to maintain the positive relationship between the residential building industry and government, more can be done with suasion than regulations. Regulations will only go so far. The industry is pushing itself to even higher standards. R2000 commits builders to go to a certain level then on their own they want to take it to the next level - EnvioHome.

- There are a number of energy performance consultants active in this field. There are also many things that individual building owners and homeowners can do on their own. Many houses 50+ years old need retrofitting. The biggest savings is in a building less than five years old where they were built with electric heating systems.

- The air source heat pumps promoted by Nova Scotia Power are a good choice but not as good as ground source heat pumps. Are they promoting air source because it is more energy intensive?

- Energy efficiency can create economic development in some sectors. Programs to retrofit existing homes creates jobs and also increases awareness. Can bring in natural gas but still need to retrofit systems.

- Need to think of life cycle costs; district heating.

- Need long term life style changes like turning off computers when not in use. Entrenched habits need to be changed. There is a waste of energy in large buildings at night through lights being left on.
- Higher efficiency equipment may cost more up front but affects lower operating costs.

Existing Initiatives

A number of existing initiatives were discussed.

- Geothermal Heat Consortium in the US (of which Springhill is a member) has set an annual target of homes to be retrofitted over the next five years. Rather than treating each facility as a separate entity, New Brunswick will retrofit all 10 community colleges and 350 schools and will achieve cross-savings. A lot is being done on federal buildings - this needs to trickle down to the provinces.

- Environ Home and R2000: Nova Scotia is one of the leading provinces. R2000 may add $ 5,000 to the initial cost of a new residence but has good payback.

- There is already a lot of research on energy efficient buildings - passive heating, trees for shade and wind protection, high-tech building materials, low tech (straw bale construction).

- An example was given of a project being done with the local hospital to build awareness in the workplace on such simple things as turning out lights. With the centralized heating systems in buildings, workers feel their rights have been taken away as they can't control the heat. While it is successful in cost savings it is not successful in worker buy-in.

- R2000 has been around for some time. Windowless high rises have done a fairly good job of reducing energy but we are losing health wise with air quality problems. The clones of R2000 are the problem.

- There is some movement in the institutional sector such as universities. Institutional buildings are old and capital funding is a problem. Some schools are pulling the plug on pop machines over the weekend.

- Nova Scotia Power is looking at a partnership with Nova Scotia Department of Housing re: offering a different bulk service for public housing units. Would like to upgrade public housing services as well.

- Example given of local contractor who came to a client well versed on R2000 and passive solar and sold them on these building options. This led to the client spreading the message to others in the community who were planning to build.

Measures

Participants felt that much could be achieved in terms of energy efficiency through education and awareness. Measures were also suggested in the form of legislation, incentives, building codes and land use bylaws.

Education

- A great deal of achieving energy efficiency is related to education and awareness, measuring what we are doing in Nova Scotia, finding appropriate bench marks and bench marking this activity compared with other provinces.

- Changes in energy efficiency should be such that they are permanent - we can't slide back.

- Government should set a consistent, steady example of energy efficiency in its large properties.

- Available programs need to be better promoted.

- Education on best building practices is one action this sector can take.

- Contractors need to be educated and trained on both energy efficiency and air quality. There are concerns about air quality problems which have been arising in R2000 homes. The clones of R2000 are the problem.

- Education is needed for the operators of commercial establishments in terms of light levels, quality, fluorescent versus incandescent. In European hotels, the lights in the stairways and halls shut off.

- Add heat pumps to the list. It's a matter of getting people past the initial capital expenditure. Individuals will borrow for a car but not for energy, even with pay-backs. Costs $15,000 to install initially but capital cost can be paid off in savings in heat costs in a few years. Will last 20-25 years. Needs promotion. Would be good to have monitoring program so people know the benefits.

Legislation & Incentives

- Mandated initiatives and fiscal incentives are important.
- Incentives must be given to business and industry to get them to begin making their buildings more energy efficient.
- Do not believe in incentives for retrofitting - why should the government invest when banks won't? (Others felt good things could be achieved with incentives).
- Banks should consider giving energy-efficient mortgages and car loans.
- An incentive program to encourage green new and retrofitted commercial buildings is required.
- District heating where generation (steam electric facilities) exist should be encouraged. Concentrations of residential and institutional buildings should share district heating systems and the Department of Natural Resources should provide incentives for retrofitting buildings.
- Passive solar heating should be included under R-2000. Part of the responsibility has to be on the developer in the grid layout of lots so solar is an option.
- An example was given of small rural gas stations next to general stores where there is a smell of leaking gas. The Department of Environment should revisit the policy on the change out of gasoline tanks. (Others cautioned that the Department's regulations are too stringent and create difficulties for small, rural businesses). In terms of awareness building, a manual was prepared by the NS Gas Retailers Association and distributed throughout the province.
- For future businesses, regulations should require an emission control plan be developed before a business is approved/not approved to set up in Nova Scotia.
- Someone should be in charge of an environmental check list for the province - if we reduce emissions by 6% then we have done our part.

Building Codes and Land Use By-Laws

- Improved building codes that look at environmental features like R2000 should be supported.
- There may be opportunities to address energy efficiency through building codes however there is a concern that the codes are too restrictive and are designed for an urban context.
- The use of energy codes in house construction such as levels of insulation and ventilation are a positive approach but what about the working poor? Codes may have impacts on initial construction costs even with pay-offs.
- Codes are needed for rental buildings so the poor are not paying more than needed for energy.

Could have a subsidy for more efficient equipment.

- Municipalities must begin looking at the planning of towns and cities, making high density housing more acceptable in the public eye, as opposed to the single-family dwelling on the acre plot in the subdivision. It also must be made more economically acceptable as well. Need a workshop on land use planning.

- Government should encourage developers and real estate sectors, perhaps through covenants, to naturalize properties, maintain pre-existing soils and vegetation, use organic lawn care, and composting yard waste on site.

RECOMMENDATIONS

A combination of measures should be considered in this sector including education and training on energy efficiency and incentive programs such as for home retrofits. The potential for amendments to building codes should be looked at, keeping in mind regional differences, as noted under 1.2 above, and the potential impact on affordable housing.

Education and building awareness should be addressed to all industry stakeholders: contractors, regulators, consumers, building supply retailers/wholesalers and manufacturers.

As noted under 2.1 above, the Government of Nova Scotia should show leadership through the retrofitting of provincially owned buildings or in contractual agreement in respect to leasehold buildings.

3.4 Manufacturing and Processing

Consumer Demand

Consumer demand drives manufacturing. Participants felt that a reduction in consumption is the way to address climate change issues in this sector. It is necessary to find ways to capitalize on efficiencies in homes, vehicles and factories.

An example was given of a company where the customers say they won't buy from them if they use certain products.

It was suggested that the industrial sector is not a big market place for energy performance contractors. Savings are hard to measure.

- We are being unrealistic if we think that humans are going to stop in their tracks, halt current consumption behaviors and develop a genuine love for Mother Earth. Change in human behavior will happen eventually but it will occur slowly.

- In a facility such as a pulp and paper company, the savings to be made with turning off lights

for example, is a very small percentage of the overall power bill. In the food industry, energy costs rank 7 or 8 out of 10 in terms of production costs.

- In manufacturing it's a global competitive issue. Some will say when it becomes the norm with proven technology we will do it. There are proven case studies, for example, pulp and paper mills with co-generation facilities in this province.

- US hasn't ratified the Kyoto Protocol so there is concern for the impact if Canada imposes measures while the US does not sign.

Recycling

Participants suggested that as a society we need to develop more reusable products and packaging.

- In Europe legislation has been introduced whereby manufacturers have to take their packaging back. The producers responsibilities have been extended to packaging.

- Not only packaging has to be more recyclable, but also the components such as in washing machines.

- It comes down to an attitude change on the part of consumers - such as leaving packaging behind at the store and asking them to return it to the manufacturer.

- We should have automobiles which last twenty years with manufacturers responsible for recycling - tied in with good transportation measures. Should be building things to last or so they can be upgraded, not planned obsolescence.

- In Germany manufacturers take their cars back. It comes down to political will. Need leadership role from government but political will comes from the public supporting certain issues.

- There needs to be a balance between how long we want something to last and how quick we want it to wear out so it can be replaced with new technology.

- As an example of the implications from the manufacturer's viewpoint, to change a formulation of a tire takes five years before it is ready for the road. Ultimately the consumer is paying for this research.

- An example was given from a builder's viewpoint where an increase in the cost of waste bins from $100 to $1000 forced them to think about recycling cardboard and metal.

- From a small manufacturers/small business viewpoint, being asked to take back their products for recycling will create difficulties - they will need assistance to address this.

- The lack of an ability to recycle is an issue in some parts of the province. Transport of the waste product is the problem. It is a reflection of the economics of an area where many are

living day to day and industry won't pay extra to have recyclables picked up. Recycling is not yet seen as a cost of doing business. In smaller industrial centres in the province there may not be enough volume produced to make it economical for the waste product to be transported to another site.

Existing Initiatives

Examples were given of initiatives being taken by participants within their own organizations:

- Manufacturer considering upgrades to steam systems, looking at consumption of energy in production. In a unique position as they make a product which is sold to power plants around the world to reduce their emissions while in the manufacturing of the product they produce emissions and pay a penalty for being a manufacturer in a downtown location. Want to reduce their own emissions but do not want to be forced out of business because of production emissions while on a global scale they are part of the fix.

- For small and medium size businesses an example was given of an Eco-Efficiency Centre in Burnside Industrial Park, Dartmouth, to help businesses improve their environmental performance, including the reduction of GHG emissions, while improving the bottom line. The Centre helps match companies in the Park where the waste product of one could become the raw material for another. The Centre is operated by a partnership of three levels of government, NS Power and Dalhousie. Want to get enough interest from the private sector to have them run on their own.

- Small operation where emissions are a low priority at this point. Any changes would cost money and that would need to be passed on to the customer. Would like to be able to tap into programs like the Burnside Centre.

- A company's commitment under the Voluntary Challenge and Registry Program (VCR) comes first from the CEO and then is passed along to the Engineer - a top down approach to ensure company buy-in. An example was given of a company which undertook improvements in the energy efficiency of their buildings and are finding these are paying for themselves.

- Large manufacturer which is not directly affected by consumer pressure. Does participate in VCR. Industry association assists members in being environmentally friendly. Dealing with emissions is one of their biggest challenges. Constantly trying to bring power usage down. Obstacle is an 18 month return of capital. Three things will create change in a plant's emission levels: the measure will result in an 18 month return on investment; there is legislation and change is made through compliance; the equipment becomes obsolete.

Measures

Some participants felt legislation was the way to ensure compliance. Others supported incentives rather than the legislative approach. The importance of taking a regional perspective was also noted.

Education and research were viewed as key measures for this sector.

Be Proactive

- Should we be moving to the next level beyond the voluntary approach of Voluntary Challenge to reach those large emitters not yet on board?
- Need proactive measures. Carbon taxes are a regressive measure. Manufacturing interests will spend all their time fighting it rather than working on other options.
- Measures should not result in driving out industry. Don't get caught up in the one shoe fits all approach for the province - attempting to draft regulations in Halifax for rural issues.
- The suits need to get out of Halifax and travel to where industry is in the province. Legislation should reflect the realities of the province through sub-sections and a map to address regional issues
- As manufacturers, just give us the tools and we will find the best solutions for ourselves without impacting competitiveness. Government could give us general guidelines, outlooks - we are the best ones to regulate ourselves. A fair global playing field is a tool to help us compete. Have to know how the competition is doing and have some incentives such as cost-sharing on energy efficient smokestacks.

Education & Research

- A lot of work to be done on measuring, bench marking, education (including government) and raising awareness.
- It would benefit manufacturers to be able to share information and learn from each other through a data base or website on measures to reduce emissions or the proper use of refrigerants. Many companies are one of a kind in Nova Scotia so are not competing with each other. The only place to learn about others in the industry now is by attending out-of-province conventions.
- It would be good if the concept of the Burnside Eco-Efficiency Centre could be spread to other industrial centres of the province. Would be useful to have an information clearing house for a waste exchange - a data base where companies could list their waste products which others might be able to recycle in their production.
- Incentives should be given for research to start manufacturers thinking of recycling when a new material is produced - as part of a life cycle of a product.
- What can be done for these companies which are doing things which are positive to the environment in a global sense if not in the local/provincial sense? (See the first bullet under Existing Initiatives, above).

- If companies do get awards for reducing GHG emissions, that should be publicized to help generate good behavior in others.

- An example was given of a local manufacturer which is looking at significant reductions in switching to natural gas from bunker sea oil. Natural gas is cheaper and that is an incentive. If there were good sources of information for small/medium size companies they would also make the switch.

- May need to think of an energy efficiency table under the national process.

- Need to raise the importance of energy from 8/9 out of 10 on a list of a company's priorities (See the first bullet under Consumer Demand above). Sell industry on the benefits of energy efficiency as a business case. Consider tax credit for R&D on GHG reduction, zoning or infrastructure help.

RECOMMENDATIONS

Specific energy efficiency targets should be set for each sub-sector of the manufacturing industry or unit of product, with annual reporting requirements, tied in with the Environmental Management Systems that companies already have in place.

Identify opportunities for improvements within the industry. Regulate where appropriate to create a level playing field within sub-sectors of the industry.

The process used to identify costs and benefits of specific actions (principle 2.1.3 above) should also be used by government when making decisions on support to existing industry or in recruitment of new industry, as part of a long term strategy on the types of industry to be supported.

Whenever a sub-sector of the industry is identified as being part of the solution overall (such as a manufacturer of photovoltaic solar panels or wind generators, or existing industries in Nova Scotia) find ways to assist them in addressing emissions without reducing production.

3.5 Agriculture and Food Production

Participants considered the agriculture and food production sector both in terms of climate change adaptation and mitigation. Examples were given of the impacts already being experienced in parts of this province as a result of climate change. It was suggested that the focus should be on the broader context of the food system rather than on the agricultural sector. There was a discussion on the credit trading and zero tillage project in which Nova Scotia Power is involved.

Adaptation and Mitigation

- Reference was made at several workshops to Canada's implementation strategy to address climate change and the Agriculture and Agri-Food Table which is providing input on options

to reduce sectoral emissions and to adapt to the effects of changing growing conditions.

- The natural pH of NS soils has dropped as a result of acid rain. Need a certain level of lime added per acre to maintain pH. Acid rain is also affecting the pH in the rivers. We need a realization of where we are with this - it's later than we think. The condition of water courses in Western NS is already beyond where they should be looked at.

- A group of agricultural stakeholders in Kings County met to establish ground water demand and how to maintain levels of irrigation without affecting others. Ground water levels are much lower than the have ever been. It is a new problem so there is not much research.

- The industry is in crisis. In Annapolis County the beef population has dropped and methane emissions have been reduced as a result but there are real people hurt by lost production - farmers have gone out of business. This is not the way to reduce emissions.

- The challenge for this sector is in the emission of nitrous oxide.

- The use of excess methane to generate energy on the farm should be examined.

- Consideration should be given to drought- resistant crops.

- Canada is leading the push to have soils recognized as sinks. Some other countries are beginning to see that soils as sinks may be more measurable than forests as sinks.

- Agriculture sinks are a way to buy time but cannot be relied upon in the long term.

Food System

- It is a mistake to focus on the agricultural sector. Instead, we need to focus on the food system, so that not only production is considered, but also distribution and processing of food. It has been suggested that 58% of North American consumption of fossil fuel can be traced back to the production, distribution and processing of food. We need to think holistically here - how healthy is it to consume and how healthy is it for the environment to produce it.

- Another way of looking at the problem is to focus on energy flows and balances. In modern agri-business, it has been suggested that 16 calories of energy go into producing 1 calorie of food energy - even if the ratio of input to outputs is 10:1 it is unsustainable. Home gardening and small-scale agriculture have an input to output ration of 1:10 (assuming compost is used). That means that home gardening and small-scale agriculture are 100 times more energy-efficient than today's agri-business.

- Local and seasonal eating - eating local foods is important for reducing GHGs from transportation, because the average distance our food now travels is 1300 to 1800 km. (Nova Scotia may be closer to the 1800 km end of the range). We used to produce over 50% of our own food, but now it's closer to 26%.

Credit Trading/Zero Tillage

- NS Power is involved in a project of GHG credits in conjunction with Iowa farmers. The Iowa project gives emission offset for the utilization of agricultural practices such as minimum-till and no-till farming practices, cropland retirement, buffer strip development, afforestation, reforestation, improved timber management, on-farm power generation from biomass and methane abatement from livestock waste. The amount of the offset would be the difference between the uncontrolled emissions and the reduced emissions resulting from the recommended practices. The value of credits is as yet undetermined but in future it is expected that reduction of C02 will have a value.

- Need to understand the sub-sectors of farming such as vegetables or grain and the communities themselves. Zero tillage may work for some and not for others. Whether it is the farming or fishing sectors, it is important for solutions to be community based.

- The downside of no tillage is that spraying needs to be done to kill weeds.

- Have to take into account the social and environmental aspects of credits for zero tillage.

Measures

Measures suggested for this sector involved a focus on best practices, education, research and development. There were also suggestions for promoting home grown foods.

Best Practices

- Don't think farmers will invest in anything to reduce GHG but will do it for best business practices so need to sell it that way.

- There has been a steady erosion of farm land into industrial and residential uses. Should not be allowed to build on land that could produce natural products. Children need to know how to farm - start with small garden plots to teach them about the growing cycle.

- It is important for regions in Nova Scotia to look at what crops are viable in each area and have market potential. We should take advantage of this province's resources. The agricultural industry may need to consider new alternatives to traditional products and methods.

- At present the discussion is happening among farmers - without government involvement - on how to utilize the land base as an asset. The Federation of Agriculture and municipalities have tried to get the province to introduce at least provincial guidelines for best practices. For the good of society, regulations are needed. It would be a cost of doing business similar to federal health regulations. If applied evenly to all farmers in Nova Scotia it would work. Maybe do by audit not by enforcement.

- Where government can influence it should - enforce the rules that are there such as water

pollution caused by chemical or manure run-offs. Use the tools already available for checks and balances to encourage good practices which in turn also controls emissions.

- Government must encourage the rebuilding and maintenance of agricultural soils. Soil organic matter is a vital carbon sink. Agriculture Canada reports that the Atlantic Provinces have lost about 30% of their soil organic matter in recent decades due to unsustainable harvesting practices. Farmers should be encouraged to shift from artificial nitrogen fertilizers responsible for high levels of GHG emissions to natural composted and manure-based fertilizers.

- Some consideration is needed to adaptation in the fruit industry and the merging wine industry as well as other agricultural industries.

- The agricultural industry faces problems when farm land is sold off for housing developments and new owners don't like the smells and sounds of adjacent farms. There are initiatives available to help mitigate the odor problem but not all are aware of them or cannot afford to undertake them. There are opportunities which should be explored in the reuse of waste products such as sheep manure for home gardens.

- The Composting Council of Canada is doing a study on manure management. Some farmers overfertilize and others underfertilize. The technology needed for composting would pay for itself and would help achieve the proper pH/nutrient levels.

- Should return to small, family owned farms, natural, herbicide/pesticide-free and genetically engineered free farms. Pork and beef production effluent creates significant methane.

<u>Education</u>

- The key to success in this sector as in others is education (including government). There are movements towards environmental farm plans. More study is needed on zero tillage - will mean adding pesticides/herbicides to control weeds so is it better than the traditional type of planting. May be opening Pandora's box. There are ways to plant without impacting the natural environment.

- Ongoing education is needed with information on a less technical level - regular mailouts in every community. A pilot project has been undertaken in Kings County schools on agricultural resources.

- Sometimes have to educate government on what works. In the past government had provided soil testing and encouraged the use of lime which cuts the use of fertilizer but these are going by the way side with budget cuts. These were tools to bring about change in the industry. What benefits the farmer benefits the consumer. Soil testing should be reinstated.

- One issue is the organic waste of food processing which could go to composts. The bureaucracy in the Department of Agriculture is centered on farm management as a business not as a community solution.

Research & Development

- R&D is important in this sector - can help with better yields, environment, business. Need locations around the province to test products.

- Farmers don't want to pollute. Has anyone done research to encourage alternatives.

- There is a practice of burning blueberries and the industry has been told that it balances out the emission created by burning through new growth. More than 50% are now mowing the blueberry fields as opposed to burning. Where can we find statistics? A lot of research is being done in the blueberry industry and we are looking at mowing as the way of the future, however, some diseases are not controlled that way and some areas are not suitable for mowing.

- In farming and food processing, changes in technology such as using a more efficient tractor will happen anyway. Methane is the chief culprit in agriculture. Farmers need to be informed about best practices and changes in techniques - things they can do in their method of feeding, how to handle waste, field cultivation, types of crops they grow. This requires dedicated research. The federal and provincial governments have steered away from regulations on the reduction of methane. Need assessment of the best practices for methane reduction.

- Need to plan for a much broader range of conditions. Climate change gets attention but changes in water levels is the problem - either as a result of flooding or draught. Need better hydrologic modeling. Need to extend applied research being done at Dal and Environment Canada into the NS industry.

Home Grown Foods

- The provincial government should: promote local and seasonal eating through policies and programs (more than the existing Department of Agriculture program); promote and support urban agriculture (e.g. the city of Shanghai is almost completely self-sufficient in grains, fruits and vegetables. The urban food production in Cuba is another excellent example); develop tax incentives and give economic recognition (e.g. through the Genuine Progress Index) for home food production and processing.

- In terms of incentives, organic farming is not subsidized as much as the larger and more mechanized segments of the industry.

- Home grown foods reduce energy consumption significantly, when transportation, processing and retailing are considered. Community gardens are needed for apartment dwellers.

RECOMMENDATIONS

Consider the recommendations of the national Agriculture and Agri-Food Table on Climate Change in terms of research, education, communication and adoption of proven technologies.

3.6 Forestry

Participants noted that *forestry* refers to the industry and felt that it was important to also consider the broader context of forests as an ecosystem. In terms of forests, it was suggested that the climate change strategy should focus as much on adaptation as mitigation. The role of forests as carbon sinks was discussed. A number of current industry initiatives were identified.

Forest Ecosystems

The Voluntary Planning Forest Sector held a climate change workshop on November 24 and provided a written submission including issues which need to be addressed and actions to be considered, from the forest perspective.

- The Sector feels that NS forests must figure prominently in the strategy for two main reasons: i) forests represent a huge opportunity for mitigation actions designed to increase the net amount of carbon stored in NS ecosystems; and ii) forests dominate the NS land base, so any unwanted effects of a changing climate on forest ecosystems will be felt and seen by all Nova Scotians. They also feel that, in terms of forests, the Climate Change Strategy must focus as much on adaptation to a changing climate as it does on mitigation of climate change. There is an urgency in undertaking a comprehensive program of studies targeted at reducing key uncertainties regarding climate change, forests and forest management.

- Forestry refers to the industry. Another section is required in the Strategy on forests which looks at the sector as an ecosystem and recognizes the importance of conserving a biodiversity and our life support system.

- We are trying to slow the rate of climate change. Forests are part of an ecological web. When we change that, such as through clear cutting, the earth is not able to adapt. There is a loss of both biological and structural diversity. There is also a reduction in diversity of natural habitat, forest quality and natural adaptation to pests and disease.

- Need to take a good look at forestry. In a cost/benefit analysis, the forestry sector has a lot of weight to throw on the benefit side. This sector can also look at their use of machinery and processes which contribute GHG in their production.

- How we handle natural resources, water resources goes beyond climate change. It is all interrelated and part of a large engine.

Forests as Carbon Sinks

- There is concern with the role of the world's forest and the increased level of CO2 in the atmosphere. Second growth forests do not reach the levels of carbon storage an original old-growth forest until after 200 years of growth. The conversion of old-growth forests to young fast-growing forests will not decrease atmospheric CO2. The mismanagement of the world's forests by procedures such as clear-cutting has converted the natural forest to one which

cannot complete global ecological cycles and ultimately results in higher levels of C02 in the atmosphere. There are no wood lot standards in the province and no annual allowable cut calculated.

- There are some in Canada who are saying the answer is to switch to all hydro based electricity and cut all the forests or flood them and let then rot. Let's not march to climate change at all costs.

- The exercise should be to lower consumption but not if it means moving the problem from one sector to another.

- Our forests are invaluable for several reasons, not just as carbon sinks. It is absolutely essential for logging to take on an integrated, sustainable approach.

- All talk of forests as carbon sinks should be downplayed. Should be managing forests as forests not from the point of view of elimination. Want to maintain the integrity of forests as standing forests. Have to look at in a global sense. Don't think forests are a big player in this province as a way to meet reduction targets.

- Government must actively encourage sustainable forestry practices. Canadian forests are currently net emitters of carbon dioxide no longer a carbon sink according to the Canadian Forest Service. Old growth trees are needed for carbon storage.

- Not convinced that burning wood waste is a success story. Unless organic matter is returned to forest lands, the soil will be less and less able to hold carbon, and we will not be able to look to forests and soils as carbon sinks. What about using at least some solar energy?

Current Initiatives

- Who can contribute to reducing GHG? Pulp and paper companies take part in the Voluntary Challenge and Registry Program.

- The major mills have significant energy consumption per day. Also, pulp and paper is controlled by world market prices. When the prices are good, consumption goes up. This will be one area of challenge in the manufacturing sector. The pulp and paper industry will be a real driver in climate change discussions.

- There is a trend to using processed material/wood by-products in buildings. Cost is a factor. In the US the building industry is using steel studs rather than wood but we need to think of the energy consumed in producing this

- Wood buyer registry program - raises he cost of the finished product but the funds go into reforestation and silviculture.

Forest Management Practices

Much of the discussion on the forestry sector focused on forest management practices, both in terms of harvesting and reforestation.

Harvesting

- Wise harvesting is the key to longevity of the industry. Single crop logging is bad for the environment although it might make economic sense. There is a silviculture program funded by the major pulp companies and the province. We need to have sustainable harvests, selective cutting and incentives to replant.

- In parts of Nova Scotia the forestry industry is going to monoculture. This raises the danger of being affected by a single pest such as the bud worm. We seem to be eliminating our native species. Need diversity and to maintain what works well here.

- Market values increase when there are disasters in the world such as hurricanes and we clear cut to meet short term demand.

- During the clearing of land in Cumberland County for the toll highway the forests were burnt off. Is this proper practice?

- Some of the new equipment costs so much it needs to be run 24 hours a day to be cost effective. Operators are driven to overcut to meet costs. Does one machine cutting a lot of wood cause the same emissions as a lot of pulp saws?

- Harvesting has to be done in a way that is sustainable. Clear cutting should not be an option unless it is to get rid of infestation. Strip logging is better. Clear cutting impacts wildlife and the ecosystem.

- Clear cutting has eroded our forests and resulted in soil erosion and silt in the water. Managed forests can be sustainable and trees taken out year after year. It takes 30 years of growth to restore a clear cut forest. Why not clean up what is left behind and make use of it.

- Managed forests do not mean monoculture. Am opposed to monoculture forestry. Industry wants to take trees all of one age. In the long term, selective cutting is good so the water and fish are not affected.

- Our harvesting methods are bringing us closer to a doubling of the emission problem. Transportation of raw forest products out of the province is a complex issue. Will technology kill the industry?

Reforestation

- Nova Scotia has more farmland growing up in forests than ever before. The growing stock

in Canada is increasing in the last ten years due to reforestation, natural growth and the collapse in the farming industry.

- Climate change will have an impact on balsam fir. It does not do well in warmer climates - the tress are under stress and are infected by aphides. This is not a top grade tree so may not be a significant loss.

- It was reported that in 1958, 24 per cent of Nova Scotia forest cover had trees that were more than 80 years old. That number is now down to two per cent. Planting more even-age single-species plantations will not fix the problem and may simply contribute to overcutting and waste of the resource. The IPCC has explicitly recognized that plantations are not effective carbon sinks.

- Forestry companies are only planting trees where they won't grow themselves naturally. Natural reforestation in the southwestern part of the province is so good that thinning is required.

- If cutting practices are not destructive, natural growth works in the northern part of the province. A lot of the original forest in the area is hardwood with some softwood mixed in.

- Natural regeneration in western Nova Scotia is as fast as planting.

- Cumberland County has less regeneration than Pictou County. The forests here are old. Have to clear cut and replant or else there is a danger of fire and infestation.

- Reforestation of a mono-culture should not be encouraged. It is subject to disease. Thinning is mono-culture as well.

Measures

It was felt that research and development along with education on best practices are the key measures for the forestry sector. Suggestions were also made for both legislative actions and incentives which could be considered.

Education

- The general public needs to know that climate change has serious implications for Nova Scotia's forests and everything that depends on them. Another key message is that considerable action may be needed to keep the forests in good shape as the climate changes. Another major education thrust is needed for woodlot owners.

- We have a chance in Nova Scotia to show others how to manage forests. Should follow the work of the Issue Table on Sinks - what research they are doing. Need more public awareness of good practices in this province. There is a move to reduce the number of acres that can be clear cut and the size of machinery used.

- GHG emissions are usually blamed on the burning of fossil fuels. This is only one of many factors which have resulted in increased levels of CO2. The term GHG emissions should be replaced with CO2 levels so the general public is not swayed into thinking that emissions are the only cause of increased CO2 levels.

- Natural forests can be managed forests. In Cape Breton we have the highest percentage of private wood lots. Many want to do selective cutting but are not able to find anyone to come with a small vehicle and do the work. Need to educate and give an incentive to the private wood lot owner.

- Need to encourage the involvement of enforcement agencies. The Department of Natural Resources has an excellent program on safe wood burning and how to manage forests. More of this type of education is needed.

Research and Development

- Nova Scotia must mobilize all the research resources in the province and immediately mount a comprehensive program of studies targeted at reducing key uncertainties regarding climate change, forests and forest management. The work needs to focus as much on adaptation as on mitigation. Research resources include those of the provincial government, the universities, the federal labs and funding agencies, the industrial sector and the consulting community.

- The best way to help climate change is to plant a tree for every one cut, change harvesting practices to strip cutting and look for uses of waste products. Look at new technology and opportunities to expand existing markets. Through R&D identify all possible waste products and find out which reuses of waste products are feasible.

- The forestry industry needs to know what will be counted as a sink - is it only managed forests or will natural growth forests also be considered as sinks? There is a great deal of work to be done in this area. Trees are the lungs of the planet, replacing carbon with oxygen. A tree in decline eventually rots and gives off methane. Managed forests are managed for optimum growth.

- (While there was a suggestion that on balance forests are not carbon sinks others felt forests have a lot to contribute to sinks.) Need to look at this sector and measure it. Nova Scotia has to be concerned because of its uniqueness - large portion of land holdings are privately owned - 75% private to 25% crown land. It could be controlled but it would be a cost. Hard to tell a private woodlot owner how to mange their property. It's a matter of building awareness.

- Examples were given of eco-forestry practices which maintain a carbon sink while providing forestry products. Government should examine these methods carefully.

- The waste products are all usable, they do not need to be burned - just need to find a market. Economic development opportunities need to be identified. Pellets have become a valuable

use of waste products.

Legislation and Incentives

- Make use of the carrot and stick approach - reward good practices such as through the tax system.

- Consider government incentives for such practices as Christmas Tree Growers coordinating transportation and having one truck pick up from more than one grower. Could also have one truck pick up waste from a number of growers.

- A forestry representative in BC has recently suggested the taxing of fossil fuels with the revenue put into silviculture. It gives the silviculture industry another reason to do their job besides providing feed for mills.

- There is a national association of private woodlot owners which is trying to get a tax credit for owners who manage their own lots. It is taking time to get the accountants to see beyond three years where investment in trees is much longer.

- Reduce consumption of wood and paper (e.g. labour to re-use wood in home renovations, rather than purchasing new wood). This could be encouraged through 'green' taxes on wood and paper. Promote adoption of sustainable forestry principles developed by the Nova Scotia Sustainable Forestry Standards Committee (small woodlot owners and large companies operating on private and public lands need to adopt the principles). Adoption of such principles would likely increase the cost of wood, which should help decrease consumption of lumber and paper

NS Forest Strategy

- The NS Forest Action Accord lays out an action plan including initiatives that could be positive to global warning.

- If the Government of NS is serious about a healthy forest it should come up with a Forest Stewardship Program. The forest provides many non-timber resources/values which are the corner stone of many natural ecological cycles. Other values (estimated to be greater than $1b US) include climate regulation, soil formation, soil erosion control, nutrient cycling, habitat, genetic material, waste treatment, biological control, clean water, food production, raw materials, recreation and cultural values.

- Should over emphasize the need for reforestation even if there are areas where clear cutting is ok

- Am against clear cutting. In 1998, Nova Scotia did not meet sustainable management in forestry. More trees were cut than were replaced so we are over-cutting. Most over-cutting is done by the mills. The provincial Forest Strategy must be changed to selective cutting. Clear cutting left unattended for years results in silt and erosion. Effective cutting leaves soil

moist and cool.

RECOMMENDATIONS

As recommended by the Voluntary Planning Forest Sector:

In terms of forests, the Climate Change Strategy should focus as much on adaptation to a changing climate as it does on mitigation of climate change. Priority should be given to education, research and adjustments to current forest management practices based on current knowledge. These latter should be designed as no-regrets actions, i.e. actions that improve forest sustainability no matter what the nature of the changing climate.

3.7 Fishery

Impacts of Climate Change

The discussion on the fishery sector focused on the impact which the industry is already experiencing as a result of climate change.

- The Fisheries science is in a mess. We don't know if the problem is over-fishing, a miscount, seals or a movement of fish species. There is a lack of knowledge on both the industry science and the impact of climate change on the sector.

- Climate change drastically affects the fisheries. In the past year in southwestern Nova Scotia there have been a number of species which have decreased in numbers and new species which have come to the area. Any changes in water flow, tide rates, the Labrador current and the Gulf Stream impacts southwestern Nova Scotia.

- Changes in water temperature has created a movement in species. As one species moves out it impacts the eco-system and changes the predatory levels - some good some bad. In addition to the new fish species which came this past year, there was also an algae and a jelly fish-like spore which got into the nets and the aquaculture cages. This loss of balance in the ecosystem means a loss of income in the community.

- The water temperature is higher than in the past so we are seeing a shift to those fish which prefer warmer waters. Climate shift is predicted to give us warmer winters with more precipitation, possibly heavy rains, but not much snow pack. The water levels were at a record low and warmth this past year.

- Lobster are more active in warmer water. As the water cools they move farther offshore. With warmer water, scallops had two spawning seasons. For aquaculture, warmer water has meant faster growth and seemed to enhance the survival.

- Acid rain has a significant impact on the pH level of the water, watersheds and rivers which in turn impacts on all species. We can't be a sewage system for the Gulf of St. Lawrence

without effects - this region is at the fall-out of the St. Lawrence River system. We expect that it has affected growth, health and longevity of our species but testing has not been done.

- Adaptation is key for this industry.

- The fisheries sector can be categorized into scallops, groundfish, lobster and hand liners. All segments of the industry have an interest in understanding the impacts of climate change.

- While we may be in trouble in terms of the impact on existing fish species of a change in water temperature/water tables, there may opportunities for the introduction of new species.

- Don't believe aquaculture is a fair exchange for the fisheries. Farmed fish need chemicals, seems to be impacting seaweed kelp and there is a cost of artificial feeding.

Measures

In terms of suggested measures which should be undertaken in the fishery sector, it was felt that education and research were needed to enable communities to adapt. Development opportunities were recognized.

Education & Research

- Preparation and anticipation are key to enable communities to adapt. Fishers know that the seasons and the temperature are changing - they know the reality of the situation but the general public doesn't. The fisheries sector could be used as an example to let others know what is happening.

- Research is needed to prepare the sector. Need to support increases in fisheries and forestry research provincially and nationally. We don't know what a two degree change in temperature will do to migratory patterns and reproduction. It is difficult for industry groups to get good data on limited budgets. If the sector had more information they could be better prepared. Seeing rapid and profound changes in the fisheries - is it an evolution of species or aberrations?

- An example was given of success in restoring salmon habitat in a watershed area and the need for continued support from governments for healthy aquatic ecosystems. Aquatic food chains begin with micro organisms, which in addition comprise an even larger carbon sink than forests, worldwide. Research is needed to understand these inter-relationships.

- There needs to be a link between the universities and the fisheries in terms of available research on future scenarios for regions of the province.

- There are approximately 450 species in our waters. Can work be done through the new UCCB Environmental Research Centre?

- Adaptation is a big issue. Education is needed, possibly through the Department of Fisheries

and Oceans. Pilot projects may be needed in the sector on the species affected by climate change and new species which might migrate in.

- We won't have any fish to catch unless we take immediate action to protect ocean habitat (e.g. stopping the wholesale destruction of our corals). Recommendation: promote the consumption of plant protein and discourage the consumption of protein from fish and other animals.

- GHG is an issue for the sector but the fisheries may need to be seen in light of other environmental issues like sewer discharge. Discharge from boats in terms of diesel emissions and sewage is an issue for tourism as well as the fisheries. Education/training may be needed in the industry.

- The Bras d'Or Stewardship Society is interested in finding out the mercury content in the lakes, how that affects birds and the impact on wetlands. There may also be issues related to emissions which could be studied - could be a combination of atmospheric and water monitoring. Some assistance to the Society for research would be beneficial. Sewage waste into the lake is a problem as well as ballast water discharge from boats.

- Jetskis and seadoos - running for two hours produces more GHG than running an average car for a year.

Development Opportunities

- There are a lot of actions which could be taken which would create more jobs for example a growth in the inshore fisheries away from large harvesting practices, thus saving money on equipment and gas.

- Fuel emissions is an issue in the harvesting of fish. The technology of harvesting is changing. A move away from big trawler harvesting would mean harvesting nearer to land, less travel time.

- The fisheries should be given back to the local inshore fisher using single line methods. Dragging, trawling and similar methods are clearcutting the ocean floor.

- In terms of fleet activity and its impact on climate change, fuel efficiency and technology such as hull design are the answers. Can't change the number of boats in the fisheries without impacting the community so the answer isn't to go to fewer but larger boats.

- Spillage/leakage is rare from plants which are under ISO9000. The Department of Fisheries and Oceans makes weekly inspections - very restrictive but should be maintained.

- Other issues are discharge for refrigeration, use of freon. May need incentives to exchange old refrigeration system with new technology.

- Within Cumberland County, efforts are underway to make use of mine water energy to warm

ground water and look at the potential for developing an industry within an industrial park setting for warm water fish species. This will open the door to a lot of other land locked communities to explore the potential.

RECOMMENDATIONS

Adaptation to a changing climate is the most important issue for the fishery sector. The Government of Nova Scotia should provide education and build awareness on the possible impacts to the industry of climate change. Preparation and anticipation are key to enable communities to adapt.

APPENDIX I
Workshop Participants

(amended 25/2/00)

WORKSHOP PARTICIPANTS

E.D. Fullerton Municipal Building, Amherst

Monday, November 8, 1999

Co-Chairs

Dan Brown	Voluntary Planning
Don Zwicker	Clean Nova Scotia

Participants

Doug Bacon	Nova Scotia Federation of Agriculture
Chris Bavis	Enerplan Energy Services
Michael Cox	Confederacy of Mainland Mi'kmaq
Bill Digdon	Atlantic Combustion Products/VP Energy Sector
Les Haley	Agriculture and Agri-Food Canada
Jerry Hallee	Town of Amherst
Pam Harrison	VP Land Resources Coordinating Council
Ron Jefferson	Town of Springhill
Kim Jones	Town of Amherst
Peter Kinnear	Nova Scotia Power
Brian Lusas	Poly Cello
Roger MacIsaac	Town of Amherst
Vernon McCully	VP Land Resources Coordinating Council
Nevin McKay	Ropak Canada
Jay Metcalf	Cumberland Regional Economic Development Association
Raylene Nash	Wild Blueberry Producers Association of Nova Scotia/LRCC
Lester Settle	VP Land Resources Coordinating Council
Peter Vuillemot	Atlantic Provinces Transportation Commission
Sally Walker	Walker Environmental
Maureen Woodlock	Keep Garbage Beneficial
Doug Wyllie	Wild Blueberry Producers Association of Nova Scotia

Nova Scotia Community College, Bridgewater
November 10,1999

Co-Chairs

Dan Brown	Voluntary Planning
Don Zwicker	Clean Nova Scotia

Participants

John Aguinaga	Nova Scotia Power
Osmundo Betancourt	Nova Scotia Power
Don Burch	Michelin
Owen Hertzman	Dalhousie University
Gil Johnson	Nova Scotia Power
Ray Kelly	O.H. Armstrong
Peter LeBlanc	Management Consultant/Dalhousie University
Tony Sampson	Reinforced Plastic Systems
Ron Seney	Bridgewater Chamber of Commerce
Peter Terauds	County of Annapolis
Francis Younker	Bowater Mersey Paper Company

Maritime Inn, Antigonish
November 15, 1999

Co-Chairs

Dan Brown	Voluntary Planning
Don Zwicker	Clean Nova Scotia

Participants

Robert Blank	Maritime Steel & Foundries
Derrick Cameron	Stora Enso
Jeremy Higgins	St. Francis Xavier University
Rick Janega	Nova Scotia Power
Peter Kinnear	Nova Scotia Power
Neal Livingston	Black River Hydro/Margaree Environmental Assoc.
Dan MacInnes	St. Francis Xavier University/VP Fisheries Sector
Ray MacIsaac	St. Francis Xavier University
Tom Webb	Global Co-operation Consulting/VP Community Develop. Sector

Nova Scotia Community College, Marconi Campus, Sydney
November 18, 1999

Co-Chairs

Lucia MacIsaac	Voluntary Planning
Don Zwicker	Clean Nova Scotia

Participants

Pat Bates	Bras d'Or Stewardship Society
Osmundo Betancourt	Nova Scotia Power
Red Conrod	Nova Scotia Power
Ron Grant	NS Silviculture Contractors Assoc./VP Forest Sector
Debbie Hendriksen	Atlantic Coastal Action Program - Cape Breton
Alan Kehoe	Cape Breton Development Corporation
Slawa Lamont	Centre for Environmental Research, UCCB
D'arcy Lynch	Cape Breton Beverages
Allister Marshall	Chapel Island First Nation/VP Forest Sector
Malcolm MacNeil	Precision Fineblank Components
Kara Paul	Eskasoni Fish & Wildlife Commission
Lisa Paul	Eskasoni Fish & Wildlife Commission
Les Stewart	Canadian Petroleum Products Institute
Debbie Totten	NS Forest Association/ VP Forest Sector
Pixie Williams	UCCB Biodiversity Research Association/CB Naturalists Society
George Wheeliker	Voluntary Planning Transportation Sector

Nova Scotia Community College, Burridge Campus, Yarmouth
November 22, 1999

Co-Chairs

Ron Robichaud	Voluntary Planning
Don Zwicker	Clean Nova Scotia

Participants

Chris Atwood	South West Shore Development Authority
Rene Belliveau	Environmental Contracting
Anne Boudreau	College D'Acadie - EcoTourism
Michael Comeau	Western Valley Development Authority
David Daniels	Lunenburg Regional Recycle & Composting Facility
Linda Gregory	Municipality of the District of Digby
Ron Harper	Canadian Petroleum Products Institute
John Landry	Nova Scotia Power
Gil Johnson	Nova Scotia Power
Scott McIntosh	Wave Energy - Fluid Dynamics Division
Mil Nickerson	Tusket River Environmental Protection Association
Chris Perry	Municipality of Yarmouth
Jan Slakov	Enviro-Clare
Robert Thibault	Municipality of Argyle
Evan Walters	West Head Harbour Authority

Holiday Inn Harbourview, Dartmouth
Monday, November 29, 1999

Working Group I - Hawthorne Room

Facilitator

Dan Brown	Voluntary Planning

Participants

David Aalders	Herring Cove Road Project
Janet Barlow	Earth Cycle Opportunities Society
Karen Beazley	Dalhousie University
Gordon Blackmore	Black Business Initiative
Maria Cain	Individual Interest
Dave Caulfield	Genuine Progress Index (GPI) Atlantic
Duncan Cross	Nova Scotia Environmental Industry Association
Peter Duinker	Dalhousie University/VP Forest Sector
Chris Feetham	Halifax Regional Municipality/Municipalities Table
Stephen Full	PanCanadian Resources
Joanne Gerrish	Nova Scotia Power
Angela Griffiths	Jacques Whitford and Associates
Wayne Groszko	Ecology Action Centre/ NS Environmental Network
Shirley Hazen	Nova Scotia Interdepartmental Committee on Climate Change
Tom Keoughan	Organic Slim - Organic Gardening
Peter Kinnear	Nova Scotia Power
Helen Lofgren	Sierra Club of Canada
John MacLeod	United Mineworkers of America
Anna McCarron	Go For Green
Pam Menchenton	Nova Scotia Power
Rich Peckham	Sackville Rivers Association
Paul Pettipas	Nova Scotia Home Builders Association
John Reynolds	Voluntary Planning Energy Sector
Ted Rhodes	Nova Scotia Interdepartmental Committee on Climate Change
Steve Sears	Thermo-Cell Industries
Dick Smyth	Alliance of Manufacturers & Exporters of Canada
Cathy Travers	Individual Interest
Marjorie Willison	Urban Farm Museum Society
John Woods	Voluntary Planning Energy Sector
Daniel Wurster	Individual Interest

Holiday Inn Harbourview, Dartmouth
Monday, November 29, 1999

Working Group II - McNab A

Facilitator

Don Zwicker	Clean Nova Scotia

Participants

Cheryl Benjamin	Dalhousie University
Cheryl Bidgood	Halifax Port Authority
Rayleen Brosha	Ecology Action Centre
Joanna Brown	Individual Interest
Peggy Cameron	Environment Canada
Doug Campbell	Nova Scotia Power
Don Chard	Individual Interest
Willy Gelevan	Imperial Oil/Canadian Petroleum Products Institute
Lesley Griffiths	Griffiths Muecke Associates
Larry Hughes	Dalhousie University
Geoffrey Hurley	Sable Offshore Energy
Agnes Kurek	Dalhousie University
Joshua Kurek	Individual Interest
Jodie McGowan	Dalhousie University
Patricia Meadows	Earth Cycle Opportunities Society
Bella Niles	Environmental Coordinators Unlimited
John Shaw	Geological Survey of Canada
Jason Steeghs	Individual Interest
Brian Taylor	Halifax Regional Municipality
Joan Waldron	VP Tourism Sector
Sue Watson	Ecology Action Centre
Martin Willison	Dalhousie University
Nick Wright	Bio-Response Systems Limited

Holiday Inn Harbourview, Dartmouth
Monday, November 29, 1999

Working Group III - McNab B

Facilitator

Ray Cote	Dalhousie University

Participants

Peter Allen	Dalhousie University
Osmundo Betancourt	Nova Scotia Power
Ronald Colman	Genuine Progress Index (GPI) Atlantic
George Dawson	Irving Oil
Donald Dodge	Individual Interest
Howard Epstein	MLA - Halifax Chebucto
Brad Hodgins	NS Interdepartmental Committee on Climate Change
Vanessa Husain	Dalhousie University
Howard James	Eco Schools Program
Heather Johannesen	Pembina Institute for Appropriate Development
Rebecca O'Brien	Ecology Action Centre/Transport Alternatives for HRM
John Osborne	CPAC NS/Dartmouth Lakes Advisory Board
Rochelle Owen	Environment Canada and Health Canada
John Pearce	Transport 2000 Atlantic
Dimitri Procos	Dalhousie University
Tom Reynolds	Shaw Group
Janis Rod	Dillon Consulting
Brian Smith	Halifax Regional Municipality
David Stewart	Private Consultant
Shelley Wilcox	Earth Cycle Opportunities
Ross Wilson	QEII Health Sciences Centre

APPENDIX II
Written Submissions

Written Submissions

Amherst Workshop
Michael Cox - The Confederacy of Mainland Mi'kmaq
Ron Jefferson - Springhill Geothermal Industrial Park
Brian Lusas - Poly Cello
Peter Vuillemot - Atlantic Provinces Transportation Commission

Antigonish Workshop
Neal Livingston - Black River Hydro / Margaree Environmental Association

Bridgewater Workshop
Owen Hertzman - Dalhousie University

Dartmouth Workshop
David Aalders - Herring Cove Road Project
Peter Allen - Dalhousie University
Janet Barlow - Earth Cycle Opportunities Society
Ronald Colman - Genuine Progress Index (GPI) Atlantic
Wayne Groszko - Ecology Action Centre / NS Environmental Network
Larry Hughes - Dalhousie University
Vanessa Husein - Dalhousie University
Richard Peckham - Sackville Rivers Association
John Pearce - Transport 2000
Brian Smith - Halifax Regional Municipality
Marjorie Willison - Dalhousie University

Yarmouth Workshop
Frank Anderson - South West Shore Development Authority

Additional Submissions
George Baker - Voluntary Planning Energy Sector
Osmundo Betancourt - Nova Scotia Power Inc.
Peter Duinker - Voluntary Planning Forest Sector
Fred Hall - Millwood Environmental Action Team
Sean Maloney - Guysborough County Regional Development Authority
Doug Robinson - Town of Parrsboro
Les Stewart - Canadian Petroleum Products Institute
Debora Walsh - Canadian Association of Petroleum Producers
Gregor Wilson - Kerr Controls Ltd.
Interdepartmental Mail - completed workbook

APPENDIX III
Meeting Agenda

Agenda

Climate Change Strategy Consultation Process

2:00pm	**I**	**Opening Remarks**
		– **Purpose**
		– **Overall Process**
		– **Meeting Format**
	II	**Introductions**
2:15pm	**III**	**Presentation by Department of Natural Resources**
		– **Overview of Issues**
	IV	**Round Table Discussion**
3:00pm - 5:00pm		**Discussion on Principles (Workbook pages 24-29)**
		Supper Break (soup/sandwiches will be provided)
6:30pm - 8:30pm		**Sectoral Discussion (Workbook pages 31-53)**
	V	**Summary and Wrap Up**

Note: Four of the six workshops followed the afternoon/evening time schedule noted above. The other two were daytime sessions.